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VARIETIES OF GIFTEDNESS IN THE CLASSROOM--STUDIES OF COGNITIVE AND PSYCHOSOCIOLOGICAL FUNCTIONING IN ADOLESCENTS.

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THE COGNITIVE AND PSYCHO-SOCIAL FUNCTIONING OF FOUR CATEGORIES OF GIFTED CHILDREN WAS STUDIED. TWO GROUPS OF ADOLESCENTS SHOWING DIFFERENT TYPES OF COGNITIVE EXCELLENCE (INTELLIGENCE AND CREATIVITY) AND TWO GROUPS EXHIBITING DIFFERENT TYPES OF PSYCHOSOCIAL EXCELLENCE (MORALITY AND PSYCHOLOGICAL ADJUSTMENT) WERE INVESTIGATED USING A WIDE VARIETY OF MEASURES, PART OF WHICH WERE ESPECIALLY DEVELOPED FOR THIS RESEARCH. TRADITIONAL METHODS OF EVALUATING GIFTEDNESS HAVE DIVIDED CHILDREN INTO CATEGORIES OF HIGH OR LOW INTELLIGENCE, BUT RESULTS OF THIS STUDY INDICATE THERE ARE TWO OTHER USEFUL CATEGORIES OF COGNITIVE FUNCTIONING--"HIGH IQ WITHOUT CONCOMITANT HIGH CREATIVITY" AND "HIGH CREATIVITY WITHOUT CONCOMITANT HIGH IQ." THOSE STUDENTS REPRESENTING THESE CATEGORIES WERE FOUND TO BE EQUALLY SUPERIOR IN SCHOLASTIC ACHIEVEMENT TO THE POPULATION FROM WHICH THEY WERE DRAWN BUT THE TWO GROUPS DIFFER SHARPLY IN VALUE ORIENTATIONS, THEIR EFFECT UPON TEACHERS, THEIR FANTASY PRODUCTIONS, THEIR CAREER ASPIRATIONS, AND WERE FOUND TO COME FROM VERY DIFFERENT FAMILY ENVIRONMENTS. (AL)

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# VARIETIES OF GIFTEDNESS IN THE CLASSROOM:
## STUDIES OF COGNITIVE AND
## PSYCHO-SOCIOLOGICAL FUNCTIONING IN ADOLESCENTS

by

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January, 1961

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## PREFACE

When an area of inquiry has been well-traveled or at least surveyed, the researcher may begin with a detailed map as a guide and clearly defined issues as objectives. His map is composed of the theoretical and empirical work that has preceded him. His objectives derive from formally stated hypotheses that determine his subjects, instruments, and procedures. For some areas of inquiry, however, maps are not yet available. All that exist are desultory travelers' tales, conflicting in testimony and offering contradictory counsel. Here the researcher must allow the phenomena--the terrain itself, so to speak--and his own power of observation to serve as guides. The risk of becoming lost, or of engaging in unprofitable meander, is of course great. But the possibility of obtaining a first-hand and perhaps more precise view of the area under inquiry more than compensates for the admitted risks. The test of whether the risk has been worth taking lies in the heuristic value of the exploration.

This study was begun with few preconceptions and few presuppositions. We did not start with a formal set of hypotheses drawn from already existing theory, nor did we begin with sets of alternate educational practices in order to demonstrate the superiority of one over another. Rather, the study was begun as a survey of varieties of giftedness in adolescents. The broad survey was gradually abandoned as it became increasingly clear that certain types of cognitive and psychosocial giftedness were of greater research interest, and we venture to think of greater ultimate importance, than were others.

Of these types of giftedness, the cognitive style to which the label "creativity" is most frequently applied seemed at once the least explored and the most significant. If we may return to our initial metaphor, the attraction of the relatively untrodden path leading to a more penetrating view of creativity in adolescents became so compelling that we let it take us where it would. More cursory explorations of other paths, most notably in the areas of morality and psychological adjustment, were undertaken, but in effect the major focus of the study became the investigation of two conceptions of cognitive giftedness; one was the relatively well-defined intelligence concept as assessed by the standard I.Q. metric, the other was the less well-defined creativity concept for which assessment procedures still had to be in large part constructed.

Before we began the study we were faced with a number of methodological alternatives. On the one hand, we could have attempted to obtain a random sampling of students from a random sampling of schools. This would have permitted us to make immediate inferential statements applicable to a larger population but would have limited the depth and intensity of observations for any given subject. On the other hand, we could study a rather more limited and consequently atypical sample. This would not permit immediate inferential generalization but would allow a greater depth and intensity of observations of individual subjects. Similarly, we could have used already available assessment procedures, hoping that they would be relevant to the kind of observation we were interested in making. Or, we could construct experimental instruments relevant to the specific observations we needed to make. In view of the exploratory nature of our investigation we chose to work with intensive rather than extensive observations, using specific rather than general instruments.

These choices carry with them certain consequences. First, there is obviously the problem of the representativeness of our sample. The reader interested in a picture of the distribution of giftedness among American adolescents will not find it in this study. Second, there is the problem of the technical refinement of the instruments we used experimentally. The reader searching for ready-made selection tests for immediate use will not find them here either. The study is intended for those who are interested in the processes of cognition and psycho-social functioning, and more especially of gifted cognitive and psycho-social functioning. The purpose is to raise certain issues regarding these processes among adolescents and to provide tentative formulations arising from the specific empirical findings.

Our report is concerned essentially with the functioning of four groups of adolescents. Each group is characterized by a particular kind of cognitive or psycho-social process. Clearly a number of other groups could have been identified for intensive study--for example groups composed of adolescents outstanding at once in several of these processes--but our central concern was with the differentiation, analysis, and personal and scholastic consequences of excellence in one kind of process rather than another.

The atypical nature of our sample and the experimental status of many of our instruments raise the important question of the replicability of the findings. Fortunately, a number of the essential findings of the study are being confirmed by other workers using broader samples. For example, E. Paul Torrance of the University of Minnesota, using a wide range of schools and subjects, has in large measure successfully replicated those aspects of our results relevant to his studies of cognitive functioning in primary school children. The prospect of standardizing the instruments for general use and of further replications of the present findings are encouraging indeed.

One final word. We have suggested that a crucial test of an exploratory study of this type is the heuristic value of the theoretical formulations deriving from it. This test rests with future research.

## Acknowledgements

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The final report was completed while the first-named author was a Fellow at the Center for Advanced Study in the Behavioral Sciences, Stanford, California, and he wishes to express his appreciation to the Director and staff for making this possible.

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# CHAPTER I

## THE GENERAL PROBLEM AND THE SPECIFIC QUESTIONS FOR INVESTIGATION

Any consideration of giftedness in children must begin with reference, however brief, to the monumental studies of the late Lewis M. Terman (Terman et al, 1925; Burke, Jensen, and Terman, 1930; Terman and Oden, 1947, 1959). The debt of present-day researchers and educators to Terman is at least two-fold. First, he, more than any other individual, did much to discredit if not to destroy the ancient and dishonorable stereotype of the child with exceptional intellectual ability. Prior to Terman's work--and to some extent even since, for stereotypes die hard--children of this kind were portrayed as long-haired, thick-lensed, badly-coordinated ( if not actually anemic) youngsters who were unpopular with both age-peers and adults, and whose chances of living a rich and full life were small. Terman's findings sharply contradicted this image. Far from being long-haired, thick-lensed, badly-coordinated, the gifted children he studied were found to be healthier than the average child, to be better coordinated, to possess greater psychic strength and personal elan, and in general to be living a richer and fuller life.

The second debt due Terman is owed more particularly by researchers than by educators or the public at large. To the researcher interested in studying giftedness in children, Terman left a model that was at once powerful and attractive in its simplicity and replicability. Briefly stated, this was the basic procedure: Terman and his associates entered the schools of a particular area--in his case California--and with the aid of intelligence tests (both group and individual tests) skimmed off the top one or two or three per cent of the children in IQ. Labelling these children "gifted", Terman then proceeded to ask the question: What other qualities are associated with this exceptional intellectual ability--"exceptional intellectual ability" being of course defined by the high IQ. It was not long before other researchers were repeating and extending this work to other populations--invariably using the IQ metric, relating it to other qualities, finding essentially what Terman had found. Our knowledge of this particular type of giftedness accumulated rapidly.

Recently numerous efforts have been made to inter-relate and to summarize the over-all findings in this area, to take, as it were, inventory of what we have been up to. Characteristic of these efforts is a 1954 symposium (Strang, 1954) whose participants included Terman himself, his associate Melita Oden, Margaret Mead, Ruth Strang, Paul Witty, and others--each of whom has contributed significantly to the study of children and of giftedness. The charge to the symposium was to bring the professional public up to date on what we know--some thirty years after Terman's initial publications--about the gifted child.

In a sense the papers presented in this symposium serve as the point of departure for the research to be described in this report. Each paper is excellent in its own right, but collectively they reflect a relative diminution in the growth of our understanding of giftedness in children. Although never explicitly stated, the most striking message that may be drawn from the various papers is that despite the expenditure of thousands of man-hours of research energy the things that could be said with certainty about the gifted child in 1954 did not differ significantly from the earliest findings of Terman. To be sure, many of the statements made very tentatively by Terman in 1925 could be made with greater conviction in 1954. The empirical support for the initial findings has been greatly strengthened. But by and large further development and refinement of our knowledge in the area seem not to have been forthcoming. The critical question is: Why?

It will be recalled that for Terman the word "gifted" was synonymous with "high IQ", and the term "gifted child" was for all intents and purposes only a short-hand way of saying "child with a high IQ". While this psychometric definition is a powerful and heuristic one, in the sense of opening the way for a multitude of empirical studies, it is not without severe limitations. First, the correlation between the IQ metric and other educational and psychological variables is fairly high and fairly stable, but rarely does it account for more than one quarter of the variance in such crucial factors as school achievement and academic performance. The high IQ child who is doing poorly in school and the low IQ child who is doing well appear far too frequently for the IQ to stand as the sole predictive device of intellectual ability, or to use it as the criterion of giftedness.

Second, as a technique for assessing a person's cognitive power, the IQ metric seems peculiarly immune to advances in our psychological understanding of man. Psychometric precision seems to have been gained at the cost of psychological sophistication. At least in part, this circumstance is due to the fact that in order to gain professional (and commercial) acceptance, a new intelligence test has to correlate highly with the old intelligence test, i.e., it has to measure the same thing. This procedure--almost universally accepted as the test of validity--effectively perpetuates the original conception of intelligence as reflected in the IQ metric, and buffers it from serious theoretical and empirical scrutiny.

Considerations such as these led us to speculate whether the apparent standstill in our conception and understanding of the gifted child might not be due (at least in part) to the reliance of researchers on the IQ as the sole defining criterion of giftedness. Might there not be other cognitive aptitudes in addition to those measured by the IQ that when possessed by a person might lead us to call him gifted? Indeed, recalling the work of Guilford (1952), is not "creativity" just such a variable? And further, need the term gifted even with children be applied exclusively to cognitive excellence? Are there not some psycho-social qualities--for instance, character and emotional stability--which might lead us to call an individual gifted, and might perhaps be reflected in superior school performance, to say nothing of excellence in other areas such as leadership or interpersonal relations?

Clearly, issues of the kind raised here are not new nor unique to us. The American Association for Gifted Children, for example, some time ago argued that qualities other than the IQ be included in the conception of giftedness, and defined the gifted individual as "a person whose performance in any line of socially useful endeavor is consistently superior. This definition includes those talented in art, music, drama, and mathematics, as well as those who possess mechanical and social skills and those with high abstract verbal intelligence." (Strang, 1954). Despite this and other similar calls for multi-dimensional definitions of giftedness the essential point remains: In research as in educational practice the IQ metric continued to be the preponderant and often exclusive criterion of giftedness in children. Accordingly, we undertook to examine empirically the consequences of applying a multi-dimensional conception of giftedness to the study of children.

Our initial efforts to explore possible forms that giftedness might take can briefly be summarized as follows. We began by thinking of all the positive statements we might make about a child, i. e., statements such as "He is a good student," "She is beautiful," "He is honest," "She has a lot of pep and energy," "He is a fine athlete." After compiling a rather long list of such statements, we attempted to group them into a manageable number of categories. Thus, for example, statements dealing with "honesty," "trustworthiness," "character," and the like, were combined under the category "Morality." This procedure led to the naming of thirteen categories which, so far as we could tell, could appropriately include all the qualities characteristically used to describe children in favorable terms. These categories were: Intelligence, School Achievement, Social Skills, Athletic Ability, Personal Appearance, Physical Health, Energy, Humor, Creativity, Morality, Goal Directedness, Breadth of Interests, Psychological Health.

We proceeded to examine the nature and inter-relation among the qualities by asking groups of teachers and parents to evaluate the categories in a number of different ways. The specific findings obtained from this aspect of our study are reported in Appendix E, and need not detain us here. What is important is that these exploratory studies indicated to us quite clearly the advantages of expanding our definition of giftedness to include a number of intellective and psycho-social qualities in addition to the IQ. Further, many of the common assumptions about the reactions of teachers and parents to the concept of giftedness were brought into serious question by our findings. It was discovered, for example, that although both teachers and parents define the gifted child in the same cognitive terms, teachers prefer such gifted children in the classroom, parents do not prefer them in the family. Or again, the relationship between the qualities defining giftedness in children and the qualities believed essential for success in adults is nil for teachers, somewhat higher but still low for parents. In any case, our exploratory work encouraged us to use these thirteen categories as a heuristic framework for studying giftedness in children.

With this as the framework, we selected as our subjects for study 449 children comprising the total population from the sixth through the twelfth grades of a Midwestern private school. The choice of school was predicated by a consideration of the extensive data from the children, parents, and teachers required for our research. The staff of the school in question was willing to accommodate its program to our needs over a period of some weeks in a way that would not have been possible in a public school. Given the exploratory nature of the investigation, the risk of dealing with an atypical population was overshadowed by the advantage of having the full cooperation of the children, their parents, and the teachers.

In the early stages of our work with the children the primary problem was the technical one of developing procedures for assessing the qualities represented by each of the categories. For some of the categories, the task was relatively easy, for others it was exceedingly difficult, if not impossible. For several of the categories there already existed widely-accepted assessment techniques; for the greater number, however, we were faced with the task of constructing our own instruments. In the case of intelligence, for example, we of course relied on the already available individual and group IQ tests. In the case of "creativity", in contrast, we were forced to use a number of tests that are still in the experimental stage, including some that were developed especially for the project.

It is of course clear that there were not the resources, and we venture to say probably the energy, to study all the categories. After examining the obtained data, it seemed to us that certain of the categories were of greater theoretical and practical significance than others--intelligence and psychological adjustment were, for example, potentially more fruitful than say athletics or appearance. Accordingly, although all the data were used in analyzing the subjects, we chose for intensive experimentation: intelligence, psychological adjustment, creativity, breadth of interests (which we called Activities), morality, and bouyancy (an empirically derived category combining the original qualities of humor and energy). For each of these dimensions we identified an experimental group of gifted subjects (arbitrarily defined as the top 20% of the total school population) in that dimension only. Children who were above the top twenty per cent in more than one of the six dimensions were not included. Since the Activities and Bouyant groups contained so few subjects that inferences from them could not be drawn with confidence, this report will deal with the four groups of gifted adolescents representing the following categories: creativity, intelligence, morality, psychological adjustment. Two of these categories--creativity and intelligence--provide the context for examining the consequences of expending our conception of giftedness in the cognitive sphere. The other two categories--morality and psychological adjustment--similarly serve as a context for examining the consequences of expanding our definition of giftedness in the psycho-social sphere.

Summarizing the argument to this point, then, we have said that "giftedness" as related to children has most frequently been defined as a score on an intelligence test, and typically the study of the so-called gifted child has been equated with the study of the single IQ variable.

Involved in this uni-dimensional definition of giftedness are several types of confusion, if not of outright error. First, there is the limitation of the single metric itself, which not only restricts our perspective of the more general phenomenon, but places on the one concept a greater theoretical and predictive burden than it was intended to carry. For all practical purposes, the term "gifted child" has become synonymous with the expression "child with a high IQ," thus blinding us to other forms of excellence. And second, within the universe of intellectual functions themselves, we have behaved as if the intelligence test represented an adequate sampling of all these functions. For example, despite the growing body of literature concerning intellectual processes which seem closely allied to the general concept of "creativity," we tend to treat the latter concept as applicable only to performance in one or more of the arts. In effect, the term "creative child" has become synonymous with the expression "child with artistic talents," thus limiting our attempts to identify and foster cognitive abilities related to creative functioning in areas other than the arts.

It seems to us that despite its longevity there is nothing inevitable about the use of the IQ in defining giftedness. Indeed, it may be argued that in many ways this definition is only an historical accident--a consequence of the fact that early inquiries in the field had as their context the classroom and its attendant concern with academic achievement. If we moved the focus of inquiry from the classroom setting, we might identify cognitive qualities defining giftedness for other situations just as the IQ did for the classroom. Indeed, even without shifting our focus of inquiry, if we only changed the original criteria of learning, we might change the cognitive qualities defining giftedness even in the classroom. For example, if we recognize that learning involves the production of novelty as well as the remembrance of course content, then measures of creativity as well as the IQ might become appropriate in defining characteristics of giftedness.

Nor is there anything inevitable about limiting the concept of giftedness to cognitive excellence, however defined. Although the question may be largely a semantic one, there is no doubt that many socially desirable qualities exist beyond those with an exclusively intellectual focus. Surely, study of such qualities must be an adjunct to any general empirical examination of giftedness.

As has already been suggested, then, in line with the foregoing argument, two initial research tasks were formulated: (1) to identify two groups of adolescents each exhibiting as its salient experimental characteristic a different type of cognitive excellence--in the present case, "intelligence" and "creativity"; and (2) to identify two groups of adolescents each exhibiting as its salient experimental characteristic a different type of psycho-social excellence--in the present case, "morality" and "psychological adjustment." The fundamental purpose of the investigation was the intensive study of these groups. For each pair of groups, the following general questions were posed:

1. What is the nature of their behavior in school? For example, do they do equally well on tests of scholastic achievement? Are they perceived as equally desirable by their classroom teachers? Do they attach the same meaning to their educational experience?

2. What is the nature of their value orientations? For example, do they aspire to similar career goals? Do they hold similar views of "the good life"?

3. What is the nature of their family environment? For example,

do the parents of the two groups perceive their children in similar ways? Are there differences in the physical aspects of their home environment? Are there differences in the patterns of parental control and dominance in the home?

# CHAPTER II

## RESEARCH INSTRUMENTS AND PROCEDURES

This section of the report describes in some detail the tests, rating scales, and other assessment devices used in the selection and analysis of our four experimental groups. In the case of tests designed especially for this research a brief statement of the rationale is given, a few sample items are presented, scoring procedures are described, and the complete instrument is reproduced in an Appendix. Commercially-obtainable tests and those described in detail by other researchers are treated more briefly, and wherever possible the reader is referred to the original test manual or other published material.

The chapter is divided into five sections. The first four deal with procedures used to identify the four experimental groups, or with what might be called the independent variables of the study. The fifth section deals with procedures used to discriminate between the experimental groups, or with what might be called the dependent variables of the study.

## Intelligence Tests

Intelligence test data were supplied by the Records Office of the school in which the study was conducted. In most cases, these data were in the form of Stanford-Binet IQ's, although perhaps a dozen were WISC scores. Recently, however, the school testing program has been changed, and entering students are now given the Henmon-Nelson rather than the Binet. In order to translate the Henmon-Nelson scores to equivalent Binet scores, the former instrument was administered to a group of 55 students for whom Binet scores were available. The correlation coefficient between the two instruments was .814. The resulting regression equation, used to transform Henmon-Nelson IQ's to equivalent Binet IQ's was:

Binet score = .937 (Henmon-Nelson IQ) + 11.975

## Creativity Tests

As it is used in this study, the term "creativity" refers to a fairly specific type of cognitive ability reflected in performance on a series of paper-and-pencil tests. Unlike many popular definitions, our use of the term does not assume that this type of ability appears only in persons judged to be creative in the artistic or scientific sense. The application of this popular criterion would make the empirical study of creativity among children almost impossible. Rather, we shall start with the assumption that these cognitive abilities are found to some extent in all persons--children and adults, painters and housewives. Finally, these abilities (and the instruments used to assess them) do appear to be logically related to the more popular definitions of creativity and, ultimately, may be found to be empirically related to the more conventional concept.

Stated in slightly different language, our research interest focuses upon "creative potential" in the same way that a music instructor is interested in assessing the musical potential of a child. Just as all children who possess fine tone discrimination or a highly developed sense of rhythm do not achieve the distinction of becoming fine musicians, so all children who possess outstanding creative abilities, in our sense, might not be expected to become creative artists or scientists as adults. Nonetheless, the relative absence of these abilities in the child would probably lead to a prognosis of poor creative performance in the adult.

In general, all the tests in the creative battery involved facility in dealing with verbal and numerical symbol systems and object-space relationships. Some instruments called for rapid verbal associations to stimulus words; others called for the ability to structure quickly an incomplete or distorted perceptual stimulus; still others required remote, or clever, or original responses to complex verbal situations (e.g., supplying last lines to a fable).

As Guilford and others have noted (Guilford, 1954), the development of scoring procedures for tests of creativity presents some unusual problems. Here, more than in other testing areas, the choice between subjective and objective scoring methods is of paramount importance. The question becomes how to reflect in a score the richness and uniqueness of a subject's response without sacrificing scoring reliability. Our attempt to maintain a balance between subjective and objective methods--between complexity and simplicity--led us in a number of instances to the development of unnecessarily elaborate and time-consuming scoring procedures.

A subsequent analysis revealed that many of these scoring procedures contained subtleties that had little effect on a subject's total score and, hence, could have been omitted. For example, the original scoring of the Word Association Test required a rating of each subject's response according to the total number of meanings suggested, the number of different meanings, and the relative uniqueness of each meaning. Later it was found that a new and simplified system--using only the number of different meanings--produced results almost identical with the old. The rank order correlation between the new and old system for 40 subjects was .97. Similarly, the correlation between the original and the simplified scoring system for the Make Up Problems Test--again with 40 subjects--was .93. Consequently, the following descriptions of the creativity tests contain directions for using the simplified scoring procedures, where these were found to produce substantially the same results as the original, more elaborate, methods. In the case of those tests where subjective judgment still plays an obvious role in the scoring, an estimate of inter-judge reliability is reported.

Finally, in addition to the five tests to be described below, the creativity battery originally included a Gestalt Completion Test and a Creative Attitude Questionnaire. Both of these instruments, which are described in Appendix C, were discarded when it was found that they had no empirical relationship with the other tests in the battery. The specific correlation coefficients are given in Appendix D.

### Word Association Test

Description and rationale. This test presents the subject with 25 words, each of which has multiple meanings (e.g., ARM, CAP, DUCK, FAIR, PITCH, PUNCH, SACK, TENDER, etc. ). The student is asked to write as many meanings as he can for each word. Successful performance on this instrument appears to require the ability to shift frames of reference within an organized structure.

Time allowance. Subjects required approximately 15 minutes to complete the test, although no time limit was set in the instructions.

Scoring. A subject's score on this test was the total number of different meanings that he supplied. If, for example, to the word ARM a student gave the following response: "arm of a chair, arm of a sofa, part of a man's body, to supply with weapons," he would be given a score of 3 for that word. "Arm of a chair" and "arm of a sofa" would receive only one credit between them since they both referred to the same meaning of the word. When there was a question of whether to give credit for a particular meaning, the dictionary was generally used as the final authority. Credit was also given, however, for recognized slang expressions--particularly adolescent jargon. For example, the word "haircut" was given credit in response to the word: DUCK. Meanings that applied to homonyms of the stimulus words were not given credit. For example, no credit was given "unadorned" when used as a response to the word: PLANE.

Reliability (Internal consistency). A coefficient of .87 was obtained using the responses of a single class (N = 32) chosen at random. Rulon's formula (Rulon, 1929) was used in this and in all subsequent computations involving the internal consistency of our instruments.

Uses Test

Description and rationale. This test presents the subject with the names of five common objects (bricks, pencils, paper clips, toothpicks, and sheet of paper) and asks him to write as many different uses as he can for each object. The name of each object is followed by two examples--one representing a common use, the other representing an unusual use (e.g., Brick--build houses, doorstop). The idea for this test derives from a description of a similar test used by J. P. Guilford in his factor-analytic studies of cognitive ability. In early descriptions of the test (Guilford et al, 1953, 1954) it is labelled "Unusual Uses" and its authors suggest that it was designed to assess originality. In a later publication (Guilford, 1959) a similar test, called "Brick Uses," is mentioned and is said to assess "ideational fluency" or "semantic spontaneous flexibility," depending on whether the scoring uses the number of responses or the number of classes into which the responses may be placed. (N.B. In his discussion of divergent thinking factors Guilford distinguishes between those factors that involve the production of units, and those that involve the spontaneous shifts of classes. He further distinguishes both of these types of productions from the production of "semantic transformations" to which he applies the term "originality").

This test was included in the creativity battery because it apparently measures the subject's ability to shift frames of reference, to use the environment in an original manner. Unlike the Word Association Test, where the number of responses is limited by the universe of meaning that is commonly attached to the word, the Uses Test offers almost limitless opportunities for responding.

Time allowance. Subjects required approximately 15 minutes to complete the test, although no time limit was set in the instructions.

Scoring. The two important considerations in scoring responses to the Uses Test were the number of different uses suggested for an object and the relative uniqueness of these uses. The first step in scoring was to tally and classify all of the responses of a single sex-class group (e.g., freshman girls) to each of the five stimulus objects. These responses were then divided into two groups: common and uncommon. Common uses were those mentioned by one-fifth or more of the respondents, the remainder were called uncommon. (N.B. This procedure differs somewhat from that adopted by Guilford in scoring his Unusual Uses Test. Because the responses came from a greater number of subjects, Guilford was able to discriminate five levels of "uncommonness," each level representing approximately one-fifth of the total responses. In the present study, however, the responses were much more dichotomous; either they were very common or very uncommon.)

After the responses to all five objects had been classified, each student's response to each item was given two scores: 1) the number of different uses suggested for that object; and 2) the number of uncommon uses suggested for that object. For example, a student who, to the word "Brick," replied, "Use them to build houses; use them to build fireplaces; use them to build walls; heat them and use them as bed-warmers;" would be scored: 2-1, i.e., 2 different uses, 1 uncommon use, or an item score of 3. These scores were summed over the five stimulus objects to provide a total score.

Reliability (Internal consistency). A reliability coefficient of .86 was obtained from a randomly chosen class of 45 students.

### Hidden Shapes G-37 (Perceptual Analysis: Gottschaldt Figures)

Description and rationale. This test is part of Cattell's Objective-Analytic Test Battery (Cattell, 1956) and consists of 18 simple geometric figures each of which is followed by 4 more complex figures. The subject's task is to identify the complex figures in which the simple figure appears.

Cattell reports that this test appears with a high positive loading on a factor of "Critical Exactness" about which he states, "A high score here is associated with conscientious exactness and reliability in a wide range of performances. The individual at the positive pole is penetrating, critical of himself and others--especially others--and not given to relaxing easily....It may not be favorably prognostic in human relations, but should be predictive of individual and creative work thoroughly done." (Cattell, 1955, p. 53). In a later publication Cattell renames this factor "Critical Practicality" and states, "The expression 'critical practicality' perhaps best expresses for the present the compulsiveness, criticalness, regard for accuracy and standards, and the general practical concern shown. (It might well be called 'editor's' or 'instrument maker's' factor!)." (Cattell, 1957, p. 244).

At a somewhat more intuitive level, the test appears to call for the ability to disregard superfluous detail in perceptual situations. The fact that the test appeared to tap the ability "to perceive essentials quickly" argued for its inclusion in the creative battery. Also, a correlational analysis of the creativity instruments showed that this test was empirically related to the others (see Appendix D).

Time allowance. Subjects are allowed 3 ½ minutes to complete the test.

Scoring. The test is scored according to the direction in Cattell's manual.

Fables Test

Description and rationale. This test consists of four fables whose last lines are missing. The student is required to supply a moralistic, a humorous, and a sad ending for each fable. Example:

### The Mischievous Dog

> A rascally dog used to run quietly to the heels of every passerby and bite them without warning. So his master was obliged to tie a bell around the cur's neck that he might give notice wherever he went. This the dog thought very fine indeed, and he went about tinkling it in pride all over town.
>
> But an old hound said...

Outstanding performance on this test requires the ability to bring an incomplete situation to a sensible close and to shift frames of reference rather rapidly. The fact that the test is open-ended allows for the use of original ideas.

Time allowance. Subjects required approximately 30 minutes to complete the test, although no time limit was set in the instructions.

Scoring. Two major criteria were used in the scoring of each fable ending. The first was called appropriateness; the second, relatedness. Decisions concerning the appropriateness of a response rested on whether the student had managed to write an ending with the appropriate emotional tone, i.e., moralistic, humorous, or sad. If the ending was judged to fit the tone called for, it was given a score of 1. Thus, considering all four fables, the highest possible score in appropriateness, was 12.

A moralistic ending was defined as one having the connotations of good and bad. To the fable presented above, for example, the response, "you'll soon get tired of wearing that bell," was not given credit for being moralistic; "you are only ringing out your guilt," was given credit. The former response carries no connotations of "good" and "bad," the latter does.

A humorous ending most frequently contained incongruity or a sudden play on words. Unsuccessful attempts at humor commonly involved excessive hostility (with little or no relation to plot), triteness, heavy-handed plays on words (e.g., in response to the above fable, "If I am a dog, then you're a hog."), or incongruity so far-fetched that it had nothing to do with the story.

A sad ending usually involved death or disaster. Occasionally loneliness was suggested as a sad ending and was given credit.

Examples of responses that did and did not meet the criterion of appropriateness are given below. All of the responses are to the unfinished fable presented above.

Endings intended to be moralistic:

| GIVEN CREDIT | NOT GIVEN CREDIT |
|---|---|
| You are only ringing out your guilt. | You can't both bite and be quiet. |
| He who shakes his bell in pride is no good inside. | Now you cannot bite as you've done before. |
| Pride cometh before a fall. | One dog's pride is the safety of others. |
| That it is false pride to be proud of one's faults. | Noise does not make popularity. |

Endings intended to be humorous:

| GIVEN CREDIT | NOT GIVEN CREDIT |
|---|---|
| For whom does the bell toll now? | Some punishments are pleasant, though not intended to be. |
| This is your plight, you dogs that bite. | Bells on his neck warn those wherever he goes. |

| GIVEN CREDIT | NOT GIVEN CREDIT |
|---|---|
| Did you ring? | Now you should learn to sing. |
| That though the bell hasn't stopped him from biting, it lets the passers-by know by whom they are being used as a teething ring. | Now people can keep out of your way. |

Endings intended to be *sad*:

| GIVEN CREDIT | NOT GIVEN CREDIT |
|---|---|
| One day you'll show it off and someone will try to steal it from you and will hurt you. | You should cure yourself of the habit before you lose the bell and really hurt someone. |
| But the bell got so heavy it broke his neck. | The foolish dog is proud of his own faults. |
| Now that you're wearing the bell, people will know you and run away. You will be very lonely. | Well it looks like he won't bite any more people. |
| That the dog would soon go insane from the constant tinkling. | Why can't I have a bell too? |

The second scoring criterion, *relatedness*, concerns the relation of the ending to the material in the fable, i.e., does the ending follow logically from the material given? Relatedness was given credit only when the ending was judged to be a direct outgrowth of the conditions in the story. If any elaborate relationships needed to be traced, or any assumptions made by the rater, no credit was given. (Although this insistence upon directness might penalize certain types of "creative" responses, it was impossible to tell what the student had in mind if it was not explicitly stated. This restriction helped to avoid the possibility that the observed creativity existed in the minds of the scorers rather than the subjects.) A score of 1 was given for each ending that met the criterion of *relatedness*, thus 12 was the highest possible score on this criterion.

In all of the examples given above (whether given credit for appropriateness or not), the quality of relatedness was judged to be present. Below are given examples of endings for which relatedness was judged to be missing. As before, the endings are in response to the sample fable on page 19.

I just bit you and now you will die.

You rang the bell, now start the services.

He'll starve.

A dog can bite just as hard, bell or no bell.

That's a fast way to arouse the attention of evil-doers.

Responses that were judged lacking in relatedness tended also to be lacking in appropriateness. The person who failed to link his responses to the material in the fable was also likely to fail to achieve the proper emotional tone. The reverse, however, was not true. The presence or absence of appropriateness was not a good predictor of relatedness. Thus it appears that for these students it was more difficult to achieve the proper emotional tone for an ending than to produce a response that was related to the story. Statistics for the total population support this conclusion. The mean score on relatedness was significantly higher, and its variance less, than was true for the appropriateness score.

A subject's total score on this instrument was the sum of his scores on appropriateness and relatedness. As an estimate of the scoring reliability of this test, the complete protocols of 20 subjects were independently rated by two judges and were then ranked by each judge in order of their total score. The rank order correlation between these two sets of ratings was .30.

Reliability (Internal consistency). A coefficient of .87 was obtained using the responses of a single class (N = 46) chosen at random.

## Make Up Problems Test

Description and rationale. This test consists of four complex paragraphs, each containing many numerical statements about activities such as buying a house, building a swimming pool, and the like. For each paragraph the student is to use the information given to make up as many mathematical problems as he can within the time limit. The single restriction is that the problems must be capable of solution, using only the material in the paragraph. The student is not required to solve the problems. Example:

> Mr. Smith decided to purchase a house whose cost was $15,000. He made a down payment of $5,000, and agreed to pay the rest with monthly payments. Each monthly payment included a portion of the principal, an interest charge computed at the rate of 5 per cent per year, plus a charge for insurance which cost $129.50 per year. Mr. Smith found by talking to the former owner that it cost an average of $20 per month to heat the house. After he had owned the house for two years, he received $3,000 through an uncle's will which he applied to what he still owed on the house. A year later he purchased a new stove and refrigerator on time payments which added $35 a month to his expenses. At the same time he added insulation to the house which cost him an additional $30 a month for 18 months, but which the contractor who installed it guaranteed would reduce his heating costs by 15 per cent. Given this information, set up as many problems as you can, involving Mr. Smith's expenses in connection with the purchase and operation of his home.

To do well on this instrument a student must have the ability to translate the information given in each paragraph into a more concise symbolic form and to create new arrangements of these symbols in the form of mathematical problems. In addition, he must follow directions and read the material carefully to see what is and what is not included in the paragraph. The latter ability may contribute more to the student's score than was originally intended, since the most common cause of failure on the test was the construction of problems that required information not given in the paragraph.

Time allowance. Subjects required approximately 30 minutes to complete the test, although no time limit was set in the instructions. They were allowed to divide the time on the four paragraphs as they saw fit.

Scoring. Each problem was scored for the number of elements and operations contained in it. An element referred to a piece of numerical information; an operation referred to one of the four elementary computational procedures. A score of 1 was given for each element in the problem and a score of 1 or 2 was given for each operation (addition and subtraction were given 1 point; multiplication and division were given 2 points).

To facilitate scoring, a symbol was assigned to each numerical element in a paragraph, disregarding the actual values attached to each element. Thus, the material in the example given was summarized as follows:

a. cost of house
b. down payment
c. interest rate per year
d. insurance change per year
e. cost per month to heat home without insulation
f. money received from will
g. stove and refrigerator payments per month
h. insulation payments per month
i. number of monthly payments to be made on insulation
j. reduction in percentage of heating costs due to insulation
k. number of years house was owned before money from will was received
l. number of years between receipt of money from will and purchase of stove, refrigerator, and insulation

The above pieces of numerical information represent the "givens" of the problem situation. It was occasionally necessary to use additional symbols to represent numerical elements introduced by the student. In most instances these additional symbols referred to time constants (e.g., number of minutes in a month) necessary for the solutions to problems such as:

During his first year how much did his heating cost him per minute? These additional pieces were treated as single elements even though the person actually working the problem might find computation necessary in order to discover the number. Thus, for example, the number of minutes in a month was counted as a single element even though the average person might perform several multiplications before finding the number. In the scoring examples that follow, the letter x is used to denote these additional elements.

| Problem | Symbolized by scorer and scoring credits applied | Total Score |
|---|---|---|
| How much principal did he have to pay after his down payment? | $a - b$<br>1 1 1 | 3 |
| What was the total cost of his insulation? | $h \cdot i$<br>1 2 1 | 4 |
| After installing insulation, how much did his heat cost him per month? | $e - (e \cdot j)$<br>1 1 1 2 1 | 6 |
| How long will it be before the insulation has paid for itself in savings? | $(h \cdot i) \div (e \cdot j)$<br>1 2 1 2 1 2 1 | 10 |
| In his first year of ownership, what are his total monthly costs excluding payment on principal? | $c \cdot (a - b) + d \div x + e$<br>1 2 1 1 1 1 1 2 1 1 1 | 13 |

A number of students made up problems that were developmental in sequence, following the pattern found in many arithmetic textbooks. Thus, the second problem in a series might require for its solution the numerical element that was the answer to the first problem. The general rule for treating this situation was to give full credit (elements and operations) for a problem unit the first time it appeared and to treat it as a single numerical element when it reappeared as a sub-unit in subsequent problems. Or, in somewhat different terms, once an operation had been performed the results of that operation became a "constant" and were credited as one element when they reappeared in subsequent problems.

To estimate scoring reliability, two judges independently scored 50 problems chosen at random. The product moment correlation between these two sets of judgments was .91.

Reliability (Internal consistency). Data from a randomly chosen class of 45 students yielded a reliability coefficient of .81.

## Morality Tests

The task of defining the "moral" person belongs more logically to the theologian or the philosopher than to the psychologist. Nonetheless, the psychologist, if he is to attempt an exploratory study of morality, has the responsibility of making explicit his working definition of the term, however tentative and incomplete it might be. Accordingly, there are listed below seven characteristics that, in our view, begin to describe the moral person. No claim is made for the exhaustiveness of this list, nor is it claimed that the characteristics themselves are mutually exclusive. This description did, however, provide the conceptual background for the construction of the paper and pencil tests to be described below.

A moral person characteristically

1. chooses the moral rather than the expedient alternative when faced with an interpersonal dilemma. Further, his choice of this alternative is based upon his conscious desire to achieve a "good," rather than a desire to avoid censure or other forms of unpleasantness.
2. stands against public sentiment when this sentiment threatens to compromise moral values.
3. feels allegiance and responsibility to principles and causes.

4. feels an identification with his fellow man that extends beyond his kinship group and even beyond his regional or national group.
5. feels compassion for wrong-doers without condoning their action.
6. perceives and admits to his own short-comings.
7. holds to a self ideal in which moral qualities play a more important role than do qualities relating to physical appearance or social acceptability.

It was recognized that some of the characteristics mentioned above might be more appropriate to the description of adults rather than adolescents. The crucial issue in this study, however, was the relative presence or absence of these qualities, thus they seemed useful as guides for the development of instruments even though high school students as a group might not exhibit them as clearly as an adult population.

Do You Agree Test

Description and rationale. This instrument contains descriptions of 25 problem situations, each followed by four alternative courses of action. For each situation the student is to choose the course of action that, in his judgment, would be best for the person faced with the choice. Fifteen of the situations involve moral issues, the other ten are "filler" items used to disguise the purpose of the test.

The four alternatives to each situation are composed of two that reflect a "moral" decision and two that do not. One of the two "moral" alternatives is justified by a wish to avoid unpleasantness (e.g., "Confess in hopes that the punishment would be lighter."), the other portrays moral action as a good in itself (e.g., "Confess because that's the only proper thing to do."). The second alternative is considered more "moral" than the first.

To make the choices more difficult for the students (i.e., to make the most moral alternative less attractive) they were told that the test had been given to 500 students in the Chicago area and that the purpose of this administration was to find out the degree to which students in this school agreed with the 500 "typical American high school students." Before each alternative was listed the number of students, out of the mythical 500, who said they would choose this course of action. An example follows:

> Joe, a high school student, sometimes stays out with the gang until late at night. One night, after he came in late, his father warned him that he wouldn't be able to go out at night for a month if he came in once more after eleven o'clock. A few nights later, Joe was out with his friends again and, because of a flat tire on a friend's care, he did not get in until 11:15. The next morning his father asked him what time he came in. Joe knew that his parents always went to bed at 10:30 so that they didn't know that he came in late. What would you advise Joe to do?
>
> a. (104 chose this) Tell him that he got in at 11:00, since he was only fifteen minutes late, and it really wasn't his fault.
>
> b. (306 chose this) Tell him that he got in at 11:15 because his father probably wouldn't punish him, since it wasn't his fault.
>
> c. (3 chose this) Tell him that he got in a few minutes before eleven, because if he said he got in at exactly eleven, his father might become suspicious.
>
> d. (82 chose this) Tell him that he got in at 11:15, because any other answer would not be true.

The smallest of the ficticious frequencies was not always placed before the most moral alternative. In the above illustration, for example, the most "moral" choice (alternative "d") was said to have been chosen by more students than was a less moral one (alternative "c"). Thus, a student who for some reason decided to choose the least popular alternative for each situation would not necessarily receive a high score on the instrument.

The success of this attempt to simulate social pressure is crudely estimated by an analysis of the responses of 65 freshmen. This analysis showed that to 17 of the 25 situations the majority of the students chose the alternative to which was attached the highest "fake" frequency. Conversely, in only 2 of the 25 situations did the majority of the students choose the alternative with the smallest fake frequency. Additional evidence of the effectiveness of the faked social pressure technique was given by a number of students who advised the researchers to omit data bearing on the earlier (ficticious) study since, they argued, this was bound to influence their decisions.

A high score on this test appears to involve at least three of the characteristics of the moral person listed above. First, it requires that the student be able to discern and choose the moral alternative from among those listed. Second, it requires that he offer as a rationale for his action the attainment of a good rather than the avoidance of unpleasantness. Third, it requires that he make this choice in the face of opposition from an assumed reference group of his peers.

Time allowance. Subjects required approximately 30 minutes to complete the test, although no time limit was set on the instructions.

Scoring. The subject's total score was the number of times he chose the most moral alternative.

### Personal Opinion Questionnaire

Description and rationale. This instrument consists of 45 statements with which the subject is asked to agree or disagree. Each statement concerns an ethical or moral question. The following items illustrate the type of questions included in the instrument:

People all over the world are pretty much alike in what they consider to be right and wrong.

There's not much sense in getting stirred up over the wrong doings in the world since you can't do much about them anyway.

Everybody who lives in Chicago is a little bit responsible for a crime that is committed there.

In punishing a person the important thing is what he did, not why he did it.

People can't help feeling sorry for a criminal even though his crime is a horrible one.

If a man lived by himself on a desert island he could not do anything that would be considered wrong or bad.

Each item is designed to reflect one or more of the seven characteristics of the moral person listed above.

Time Allowance. Students required approximately 15 minutes to complete the test, although no time limit was set in the instructions.

Scoring. A student's total score was the number of items he answered correctly, i.e., in a manner consistent with the definition of morality given above.

## Descriptive Words

Description and rationale. This test consists of 20 sets of 3 adjectives, each describing a personal quality. One of the three adjectives in each set describes a "moral" quality, one a "physical" quality, and one a "social" quality. The student is required to rank the adjectives in each set according to the degree to which he would like to possess the qualities described. Separate forms are used for boys and for girls. The following are examples:

| Boys form | Girls form |
|---|---|
| a. honest | a. honest |
| b. strong | b. cute |
| c. popular | c. popular |
| a. handsome | a. pretty |
| b. likable | b. likable |
| c. loyal | c. loyal |
| a. truthful | a. truthful |
| b. cooperative | b. cooperative |
| c. skillful | c. graceful |

An attempt was made to place adjectives of equal attractiveness within each set; thus, for example, the moral adjective "impartial" was paired with the physical adjective "vigorous" rather than with "strong."

Time allowance. Subjects required approximately 15 minutes to complete the test, although no time limit was set in the instructions.

Scoring. For each set of three adjectives a score of 2, 1, or 0 points was given, depending on whether the moral adjective was ranked first, second, or third. These scores were summed over the 20 sets of adjectives to provide a total score.

## Psychological Adjustment Tests

Psychological adjustment, like morality, lends itself to a variety of definitions. But--and here the situation is quite different from that of morality--numerous tests of psychological adjustment already exist, each purporting to assess a slightly different aspect of the total concept. The researcher selecting from among all these assessment devices is forced to narrow his choice on the basis of either theoretical or technical considerations, or both. Two major considerations helped to limit the number and type of psychological adjustment tests used in this study.

First, a picture of both surface and depth was desired. That is, we wanted an appraisal derived from a student's conscious perception of his psychological functioning (conventionally obtained through self-report tests) as well as one derived from latent indicators (conventionally obtained through projective tests). The decision to include both types of instruments was based on the wide recognition given the concept of "levels of personality" in the recent theoretical and empirical literature.

Second, other things being equal, simple assessment procedures were preferred to complex ones. This preference arose from three considerations: a) a large number of children were to be tested, thus the cost of elaborate techniques would quickly become prohibitive; b) the children to be tested represented a rather wide range of development, thus the tests had to be general enough to apply to pre-adolescents as well as high school seniors; 3) to be maximally effective the findings of this study should be capable of replication without the use of elaborate and burdensome scoring procedures.

With these considerations in mind, we included in our psychological adjustment battery the following four instruments:

California Test of Personality

Description and rationale. This is a commercially-available test that consists of 180 questions of the type: "Do you often have headaches?", "Do you find that your mother and father are difficult to Please?" Students are required to answer "yes" or "no" to each question. (California Test of Personality, 1953).

The test is divided into two halves--one devoted to the assessment of "personal adjustment," the other to "social adjustment." These two parts combine to give a total score called "total adjustment."

Because of the age range of the sample being tested, the same form of the instrument could not be given at all grade levels. Sixth grade and Pre-freshmen were given Intermediate Form AA; Freshmen through Seniors were given Secondary Form AA. Both forms were the 1953 revisions.

Timing. The administration of the test followed the recommendations in the test manual.

Scoring. Scoring procedures followed those recommended in the test manual.

Indirect Sentence Completion (The G-J-G Verbal Thinking Speed Test)

Description and rationale. This instrument consists of 60 sentence stems of the type: "When Frank has nothing to do he_______," "Most jobs with responsibility make Harold feel_______." Masculine names appear in the boys' form of the test and feminine names in the girls' form. The sentences are introduced by the following statement from the person proctoring the test:

> This is a test of how fast you can think in sentences. Complete each of the following sentences so that it makes sense. You may use either a word or a phrase, although a phrase is preferable. Since you will have only a limited time, work quickly. In most cases the best way to answer is to put down the first thing that comes to your mind after you read the beginning of the sentence. Don't worry about spelling, but write as quickly and as legibly as you can.

In order to reinforce the suggestion that this was a thinking speed test, students were asked to raise their hands as soon as they had finished so that a proctor might come around and write their elapsed time on the front of their booklet. The eagerness with which students raised their hands and the lack of questions following the test suggested that the students accepted the stated purpose of the test to be accurate.

As clinicians will recognize, the present instrument is merely a conventional sentence completion test disguised as a verbal thinking speed test. The important datum is obviously not how fast the subject completes the sentence, but rather the content of his responses. Since this technique is widely used in the assessment of psychological health an elaboration of its rationale may be obtained from other sources (See, for example, Anderson and Anderson, 1951, Chapter 9).

Time allowance. Most students required about 25 minutes to complete their responses, although no time limit was set in the instructions.

Scoring. Twenty-seven of the 60 sentence stems were designed to elicit responses that could be scored as positive or negative, the remainder were "filler" items. Positive responses were those that displayed positive affect or that seemed to reflect a generally relaxed view of the world. Negative responses were those that displayed negative affect or that seemed to reflect a generally morbid or bitter view of the world. In general, responses were considered positive if they were in accord with obvious social expectations and negative if they were not. Here, for example, are some responses to the sentence stem, "Working with others makes Jack______," classified according to the positive-negative dichotomy.

| Negative responses | Positive responses |
|---|---|
| nervous | happy |
| uneasy | content |
| mad | more sociable |
| jumpy | cooperative |
| sick | congenial |
| tired | feel good |

The reliability of classifying responses into these two categories was quite high. Two independent judges scoring 297 responses had only 2 disagreements.

## Direct Sentence Completion (The G-J-G Test of Behavior)

Description and rationale. This instrument differed in only two respects from the Indirect Sentence Completion described above. First, the personal pronouns "I" and "me" were substituted for the proper nouns. Second, the purpose of the test was not disguised as it was in the case of the Indirect Sentence Completion Test. The directions given the students were as follows:

> This is a test to find out how you behave in certain situations or when certain things happen to you. In this test you are given the first part of a sentence, and you are to finish the sentence so that it tells something about you. There are no right or wrong answers, but what you say will tell something about the kind of person you are. Don't worry about spelling, but write as legibly as you can. Don't waste time.

The test was administered approximately one week after the administration of the Indirect Sentence Completion Test.

Time allowance. Approximately 30 minutes were required to complete all the responses, although no time limit was set in the instructions.

Scoring. The scoring procedures were exactly the same as for the Indirect Sentence Completion Test.

## Do You Sometimes?

Description and rationale. This test consists of 30 statements to which the subject was asked to respond "yes" or "no." In brief, the items describe a number of human frailties which the student is asked to admit to or deny. Following are examples from the test:

I sometimes say unpleasant things about a person that I would not tell him to his face.

I have sometimes been tempted to claim that I was older than I really am.

I always apologize when I have been rude or discourteous.

I have at times tried the lever on a gum or candy machine to see if I could get some without paying.

I have sometimes felt like swearing at my mother or father.

This test is an expanded version of a test appearing in Cattell's Objective-Analytic Test Battery (Cattell, 1956). Through factor analytic work Cattell has found the test to load positively on a factor labelled "Social Willingness" and negatively on a factor labelled "General Anxiety." When the test was chosen for the present research it was anticipated that scores on the Do You Sometimes? test would be added to scores on the morality tests described above. Surprisingly, the test did not correlate significantly with any of the morality instruments. However, it did correlate negatively with each of the three psychological adjustment tests described above. Accordingly, the test was added to the psychological adjustment battery and was used in the identification of an experimental group of highly adjusted adolescents.

Time allowance. Students required approximately 20 minutes to complete their responses, although no time limit was set in the instructions.

Scoring. A score of 1 was given each time a student admitted to a common frailty. These were summed to provide a total score.

## Dependent Variables

All the preceding instruments were used to identify the experimental groups. The instruments and procedures described below provided the data for answering the empirical questions under investigation.

## Achievement Tests

Achievement scores were obtained through the Records Office of the school. Two scores were obtained from each student, one in verbal achievement and one in numerical achievement. These scores were based on the following tests:

Verbal achievement. In order to obtain as stable and as comprehensive an estimate of verbal achievement as possible, an average score was computed using all of the standardized achievement data relevant to the English curricula at the various grade levels. The tests used, according to grade level were:

Sixth grade--Cooperative English Test C 1, Reading Comprehension, Form Y.

Iowa Language Test C, Basic Language Skills, Advanced Form M.

Iowa Work Study Test B, Work Study Skills, Advanced Form C.

Stanford Spelling Test, Form F.

Pre-freshmen--Cooperative English Test C 1, Reading Comprehension, Form Y.

Cooperative English Test A, Mechanics of Expression, Form T.

Iowa Work Study Test B, Work Study Skills, Advanced Form C.

Stanford Spelling Test, Form F.

Freshmen-- Cooperative English Test B 2, Effectiveness of Expression, Form T.

Cooperative English Test A, Mechanics of Expression, Form T.

Cooperative English Test C 2, Reading Comprehension, Form T, Upper Level.

Stanford Spelling Test, Form F.

Sophomores-- Cooperative English Test C 2, Reading Comprehension, Form T, Upper Level.

Cooperative English Test B 2, Effectiveness of Expression, Form T.

Juniors and Seniors-- Cooperative Literary Comprehension and Appreciation Test, Form T.

Cooperative English Test, C 2, Reading Comprehension, Form T,, Upper Level.

Numerical achievement. Because of differences in the curricula of the various grade groups, it was not possible to administer the same test of numerical achievement to all subjects. The following tests were given according to grade placement:

Sixth grade--Iowa Everypupil Arithmetic Test, Advanced Form C.

Pre-freshmen--Snader General Mathematics Test.

Freshmen-- Cooperative Elementary Algebra Test, Form R.

Sophomores-- Cooperative Intermediate Algebra Test.

Juniors-- Cooperative Geometry Test, Form 2.

Seniors-- Cooperative Geometry Test, Form 2.

## Autobiography

The students were given 45 minutes in which to write an autobiography. The students were reminded of specific topics which they might include in their writing (e.g., family, early childhood experiences, friends and associates, recreation, future educational plans).

## Drawing Test

The test instrument was a sheet of paper with a printed single-lined border approximately 5½ by 7½ inches for framing a picture. Under the border was the title "Playing Tag in the School Yard." At the top of the paper above the border were the following directions: "In the space below, draw a picture appropriate to the title 'Playing Tag in the School Yard.' You may draw any picture you like--whatever you may imagine for this theme." The paper was distributed with other test materials, and the subjects were told they could work on their drawings whenever they wished in the free time between the administration of the several other tests, or if they preferred, at the end of the testing period. In any case, there was no time limit or any other directions.

Outstanding Traits Test

This instrument consists of 13 descriptive statements that are to be ranked in four different ways by the students. Following are examples of these statements:

> Here is the student who is best at getting along with other people.
>
> Here is the student with the most pep and energy of anyone in the school.
>
> Here is the healthiest student in the school.
>
> Here is the student who gets the highest score on an intelligence test.

The 13 descriptions are repeated (in the same order) on four separate pages of the instrument. Each time they appear the student is asked to rank the statements in a different way. The four ranking procedures are: 1) "Rank these students on the degree to which you would like to have them as members of your class"; 2) "Rank these students on the degree to which you think they will succeed in adult life," 3) "Rank these students on the degree to which you would like to be like them," and 4) "Rank these students on the degree to which teachers like them."

On the last page of the instrument the statements appear for a fifth time and the students are asked to write the name of one student in their class who best fits each description.

N-A Test of Imagination (Need:Achievement)

This test consists of six pictures about which the students are asked to write short stories. Each picture is projected on a movie screen for 20 seconds and four minutes are allowed for the writing of a story. This technique is essentially identical with that used by McClelland and his associates in their studies of the achievement motive. (McClelland et al, 1953). Each story is scored for achievement imagery using the scoring system developed by McClelland, Clark, and Morgan (1952).

Strodtbeck's V-Score

This instrument consists of eight items designed to assess the student's interest in planning for the future and his willingness to break away from parental domination when achievement goals are at stake.[1] The following are illustrative items:

> Nowadays with world conditions the way they are, the wise person lives for today and lets tomorrow take care of itself.
>
> Even when teen-agers plan to get married, their main loyalty still belongs to their mothers and fathers.
>
> Planning only makes a person unhappy since your plans hardly ever work out anyway.
>
> Nothing in life is worth the sacrifice of moving away from your parents.

A student's score was the number of times he responded to an item in a way that would indicate a desire to achieve and a willingness to move away from parental domination.

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[1] The instrument was designed by Frederick Strodtbeck and is described in: D. C. McClelland, A. L. Baldwin, U. Bronfenbrenner, and F. L. Strodtbeck, Talent and Society (Princeton: Van Nostrand Co., 1958), pp. 168-173.

## Student Opinion Poll

This instrument consists of three parts, each designed to provide data pertaining to the student's attitude toward school. Part I is a 60-item opinionnaire which concerns general satisfaction or dissatisfaction with various aspects of school--viz., the teachers, the curriculum, the student body, the classroom procedures. The following are sample items, one in each of the four areas.

> While there are some differences among them, most teachers in this school are:
>
> a. very inspiring.
> b. quite inspiring.
> c. somewhat inspiring.
> d. not inspiring.
>
> Most of the subjects taught in this school are:
>
> a. interesting and challenging.
> b. somewhat above average in interest.
> c. somewhat below average in interest.
> d. dull and routine.
>
> From the standpoint of intellectual ability, students in this school are:
>
> a. too bright--it is difficult to keep up with them.
> b. just bright enough.
> c. not bright enough--they do not provide enough intellectual stimulation.
>
> The freedom to contribute something in class without being called upon by the teacher is:
>
> a. discouraged more than it should be--students do not have enough opportunity to have their say.
> b. encouraged more than it should be--students seem to be rewarded just for speaking even when they have little to say.
> c. handled about right.

This part of the instrument is scored by giving one point each time the student chooses the most satisfied response to a multiple-choice item.

Part II of the instrument contains a list of 24 adjectives which the student is to use in describing his typical feelings in the classroom. The list contains 12 "negative" adjectives (e.g., bored, restless, misunderstood, angry) and 12 "positive" adjectives (e.g., confident, happy, eager, relaxed). From this list the student is to choose six adjectives that best describe his feelings while attending classes in each of seven subject areas: English, mathematics, physical education, science, art and music, social studies, and foreign languages. No score was obtained for this part of the instrument.

Part III of the Student Opinion Poll requires the student to write an essay and is introduced as follows:

> During this academic year you have spent hundreds of hours in classes of various kinds, ranging from science and foreign language to physical education and the arts; from shop and home economics to English, mathematics, and social studies. Choose the one hour that seems to have been most worthwhile to you. Describe this class in some detail and explain why you feel it to have been most worthwhile.

Students were allowed 30 minutes to write their essay.

## Teacher Ratings

Each student was given three ratings by his present teachers. These ratings included: a) his general desirability as a student; b) his ability to become involved in learning activities; and c) his leadership qualities. Teachers were required to place all of their students on a five-point scale so that Categories 1 and 5 each contained one-twelfth of the students; Categories 2 and 4 each contained one-fourth of the students; and Category 3 contained one-third of the students. The values 5, 8, 10, 12, and 15 were assigned to the categories and were used in quantifying the ratings.

## Parent Questionnaire

A questionnaire was sent to all parents requesting the following information:

1. Persons with whom the student is now living.
2. Number, sex, and ages of student's siblings.
3. Mother's birthplace, age, education, and occupation.
4. Father's birthplace, age, education and occupation.
5. Number of times student has changed schools since kindergarten.
6. Student's present career interests, if any.

## Parent Interviews

Individual interviews, each lasting for about 2½ hours, were held with almost all of the mothers of children in our experimental groups. Some mothers of children not in our experimental groups were also interviewed.

# CHAPTER III

## THE HIGHLY INTELLIGENT AND THE HIGHLY CREATIVE ADOLESCENT: EXPLORATIONS IN COGNITIVE GIFTEDNESS

Cognition is the process whereby an organism becomes aware or obtains knowledge of an object, a quality, or an idea. That this process is complex in the extreme hardly needs exposition. Consider, for example, the process of knowing about the universe, or a flower, of colors and of numbers, of learning the conjugation of amo or understanding the second law of thermodynamics, of remembering your telephone number or gaining appreciation of the Spenserian sonnet. It is the process by which one person thinks of the language he has been using all his life as "the means through which we communicate with others," and another person as "the window through which we see experience." It is the process involved when one very young child looked at oil spilled on a wet pavement and said, "Oh, look Mommy, see a rainbow in the gutter," and the process by which her mother said, "That's not a rainbow, that's a dirty oil slick."

Guilford has suggested that there are at least forty-seven known factors of the intellect, and certainly there are many more. For analytic purposes, however, in order to make the various factors more manageable, it is possible to identify two basic cognitive or intellective modes. The one mode tends toward retaining the known, learning the pre-determined, conserving what is. The second mode tends toward revising the known, exploring the undetermined, constructing what might be. A person for whom the first mode or process is primary tends toward the usual and expected. A person for whom the second process is primary tends toward the novel and speculative. The one favors certainty, the other risk. Both processes are found in all persons, but in varying proportions. The issue is not one of better or worse, of more useful or less useful. Both have their place, and both must be recognized for their differences, commonalities, interactions, and distinctive functions in the individual's psychic economy.

Various terms have been used to describe the two processes. Guilford has suggested "convergent thinking" and "divergent thinking"; Rogers uses "defensiveness" and "openness"; Maslow "safety" and "growth." We ourselves have come to think of the two processes as "cognitive conservation" and "cognitive construction," the one tending toward acquisitiveness and conformity, the other toward inventiveness and innovation.

The intelligence test is the most widely used technique for evaluating cognition or intellectual functioning. English and English in the Dictionary of Psychology define the instrument as follows: "The test is a sample of the cognitive-function tasks that are usual and expected [italics theirs] in any large cultural group or subgroup." (English and English, 1958 p. 269). The conventional IQ type test requires the subject to know the common association to a stimulus and the accepted solution to a problem. In many of these tests the subject must respond to a stimulus for which only one "unique" answer is correct. He is not asked to innovate, to speculate, to invent, to, as it were, come up with an emergent answer. Indeed, if the answer is "novel" it is likely to be scored wrong. In short, the conventional IQ test tends toward the evaluation of the cognitive processes which have been called convergent, retentive, "conservative," more than those processes that have been called divergent, innovative, "constructive." It may of course be that the

**two processes are so closely related that to be gifted in one is in the same degree to be gifted in the other--that the two cannot really be differentiated. But if this is the assumption, it is an assumption well worth putting to the proof, and this in fact was the first task of the present study.**

## **The Highly Intelligent and the Highly Creative Adolescent: An Attempt at Differentiation**

**One way of examining the indicated assumption is by attempting to identify individuals who do indeed exhibit different types of cognitive excellence. In the present case, the attempt was made to identify two groups of subjects, the one group high in "cognitive conservation" as represented by the conventional IQ metric but not as high in "cognitive construction" as represented by tests of "creativity," the other group high in "cognitive construction" as represented by the same tests of "creativity" but not as high in "cognitive conservation" as represented by the conventional IQ metric.**

**The subjects were 449 adolescents comprising the total student population of a Midwestern private secondary school, and the two experimental groups were composed on the basis of performance on the following instruments, all of which were more fully described in the preceding chapter.**

1. Standard I.Q. tests. Either a Binet or a Henmon-Nelson score was available for each adolescent. The scores obtained from the Henmon-Nelson were converted by regression equation to comparable Binet I.Q.'s.

2. Five creativity measures. These were taken or adapted from Guilford and Cattell, or constructed especially for the study as follows:

   a. Word Association. The subject was asked to give as many definitions as possible to fairly common stimulus-words,

e.g., "bolt," "bark," "sack." His score depended upon the absolute number of definitions and the number of different categories into which these definitions could be put. For example, a student obtaining a low score on this instrument might reply to the stimulus word "bolt" by saying, "To fasten down; to secure; bolt a door; bolt a hatch on a ship." A student obtaining a high score might say, in response to the same stimulus, "To fasten down; to run away quickly; to ingest food rapidly; a bolt of cloth; a horse bolts; a bolt of lightening."

b. Uses for Things. The subject was required to give as many uses as he could for objects that customarily have a stereotyped function attached to them, e.g., "brick," "paper-clip." His score depended on the number and originality of the uses he mentioned. For example, a student obtaining a low score on this test might reply to the word "brick" by saying, "Bricks can be used for building purposes. You can build a wall with brick, or you can build a sidewalk or a fireplace with a brick." A student obtaining a high score might say to the same item, "Well, bricks can be used for building. You can also use a brick as a paperweight. Use it as a doorstop. You can heat a brick and use it as a bed-warmer. You can throw a brick as a weapon. You can hollow out the center of a brick and make an ashtray."

c. Hidden Shapes. The subject was required to find a given geometric form that was hidden in more complex geometric forms or patterns.

2

d. **Fables.** The subject was presented with four fables in which the last lines were missing. He was required to compose three different endings for each fable: a "moralistic," and "humorous," and a "sad" ending. His score depended upon the number, appropriateness, and originality of the endings.

e. **Make-Up Problems.** The subject was presented with four complex paragraphs each of which contained a number of numerical statements, e.g., "the costs involved in building a house." He was required to make up as many mathematical problems as he could that might be solved with the information given. His score depended upon the number, appropriateness, and originality of the problems.

On the basis of the IQ measure and a summated score on the five creativity instruments, the two experimental groups were formed as follows:

1. The High Creativity Group. These were subjects in the top 20% on the creativity measures when compared to students of the same age and sex, but below the top 20% in IQ (N = 26: 15 boys, 11 girls).

2. The High Intelligence Group. These were subjects in the top 20% in IQ when compared with students of the same age and sex, but below the top 20% on the creativity measures. (N = 28: 17 boys, 11 girls).[1]

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[1] The initial samples of highly creative and highly intelligent subjects were larger than the final experimental groups. Because of the goals of the total project, students who were also especially outstanding in qualities such as psychological adjustment or morality were made the subject of special study. In a sense, the present two experimental groups may be said to represent relatively "pure" creative and intellectual giftedness, since they at least do not include adolescents who were also gifted in other qualities studied in this research. Students who were high both in intelligence and creativity wer of course also excluded. The data regarding the relationship between IQ measures and measures of creativity are presented in Appendix D. A study using similar tests and a design modeled on the one used here estimates that no matter what measure of IQ is applied, 70% of the most creative children would be excluded if IQ alone were used in identifying giftedness. (Terrance, Research Conference on the Identification of Creative Scientific Talent, pp. 65-66.)

The members of the high IQ group possess the demonstrated ability to perform with excellence in the type of problem-solving tasks common to the conventional intelligence test. They do not apparently possess the ability to perform with the same excellence on the type of cognitive tasks included in the "creativity" instruments. They may be able to define the word "homunculus" with ease or to supply quickly the "unique" missing digit in a number series, but they have less facility with problems requiring them to think of several novel uses for a stereotyped object like a brick or a new ending to a familiar fable.

The reverse is true for the members of the high Creativity group. They do not do as well as the high IQ subjects on the intelligence-test type problems. But their performance is very striking indeed on tasks calling for inventiveness and originality. Although they may not be able to give the meaning of the word "homunculus" or to complete a number series with the same precision and rapidity as the high IQ's, they are able to think with surprising facility of using a brick as a bed-warmer, a weapon, or if necessary as a paper-weight, and they are able to create novel twists to old fables almost at will.

We cannot emphasize too much that the crucial question in studying the two groups of adolescents is not which is better, or which is more desirable, or of greater potential worth to society. Talent in all its forms and manifestations is worthy of our admiration and encouragement. Any decision to focus educational effort and research energy exclusively on one type of excellence is short-sighted, and in direct antithesis to the spirit of the present study. The truly crucial question, it seems to us, is how to increase our understanding of all forms of human excellence and the forces that have helped to produce them.

With this goal in mind, we may approach the analysis of our highly intelligent and our highly creative adolescents by referring to the research questions we posed in the first chapter. As these questions suggest, we are interested in examining our two types of adolescents within three broad contexts: (1) as students, i.e., what is their performance in school, how do their teachers perceive them, what is their motivation for achievement; (2) as individuals, i.e., what are their personal values and attitudes, what is the nature of their fantasy-life, what are their ultimate career aspirations; (3) as members of their family group, i.e., what is the character of the family and home environments in which these adolescents were born, developed, and are presently interacting.

## The Highly Intelligent and the Highly Creative Adolescent as Students: their School Performance, their Need:Achievement, their Perception by Teachers

As has already been indicated, the general issue regarding the behavior of these adolescents in school may be specified in three separate questions: How do they perform on standardized achievement tests? What is their motivation or need for achievement? How do their teachers view them as students?

### Scholastic Achievement

The data relevant to the question of scholastic achievement and the respective IQ scores of the two groups are presented in Table 1.

As may be readily observed, the achievement test performance of the high IQ students is significantly above that of the school population. This finding is of course not surprising, given the numerous studies showing a moderate but stable correlation between intelligence test scores and achievement test scores. But turning now to the high creativity group, we find that they too are significantly superior in achievement to the school population, and this is very surprising, for they are below the average for the school in IQ. (It will be recalled that students in the top 20% in IQ were by definition excluded from this group). Indeed, despite the twenty-three point difference in mean IQ between the high Creatives and the high IQ's,

### TABLE 1

### Means and Standard Deviations of IQ and School Achievement for Experimental Groups and Total Student Population

| | | High IQ (N = 28) | High Creative[1] (N = 24) | Total Population[2] (N = 449) |
|---|---|---|---|---|
| IQ | $\bar{x}$ | 150.00* | 127.00 | 132.00 |
| | s | 6.64 | 10.58 | 15.07 |
| School Achievement | $\bar{x}$ | 55.00* | 56.27* | 49.91 |
| | s | 5.95 | 7.90 | 7.36 |

[1] Two subjects were omitted from the sample of 26 high creatives because they failed to furnish data on the McClelland Need:Achievement instruments which become relevant for the next experiments.

[2] For purposes of comparison, the scores of each experimental group were extracted from the total population before the tests were computed.

*Differs significantly from the total population at the .001 level.

the achievement scores of the two groups were equally superior to the achievement scores of the school population as a whole. It seemed evident that the cognitive abilities assessed by our creativity battery accounted for a significant portion of the variance in school achievement.[2]

Since our creative students were not in the top of their class in IQ, however, their superiority in scholastic achievement places them, as such phenomena are handled today, not in the category of "gifted children" but rather in the pejorative category of "over-achievers." This dubious classification implies that an IQ-Achievement discrepancy in favor of achievement is a function of "motivational" (as opposed to "cognitive") variables. It is assumed that the IQ metric does in fact represent the full and true measure of the subject's intellective abilities, and that motivational factors are "pushing" the "over-achieving" child to out-do himself, as it were. Moreover, these presumed motivational factors are frequently linked in varying degree to social-psychological malfunctioning. It is noteworthy that the observed discrepancies between IQ and achievement are most usually not accounted for by saying that the test may be over-estimating or under-estimating, i.e., that the fault is in the test, but that the student is over-achieving or under-achieving, i.e., that the fault is in the child.

In view of the present data, we would raise the specific issue whether it is motivational pathology or distinctive intellectual ability that accounts for the superior scholastic ability of our creative students, despite their relatively lower IQ. And we may well raise the more general issue here whether so-called over-achievement may not at least in some cases be related to excellence in cognitive functions not sampled by the conventional IQ metric rather than inevitably related to psychopathology. Indeed, we wonder whether current studies in intellective processes other than those assessed by standard intelligence tests do not underscore the need for re-examining the entire concept of "over-achievement." As a matter of fact, as will be seen in later data, students in our high Creativity group, who would by conventional criteria be labelled "over-achievers," actually are less inclined toward "greasy-grinding" for good grades (just for the sake of good grades) than are other students.

---

[2] This finding of superior school achievement as a function of high creativity scores without concomitant high IQ scores was later replicated by others, and we consider it a very stable datum (e.g., Torrance, ibid, pp. 65-66).

As it now stands the concept of over-achievement rests on what appears to us a logical dilemma. If, as is frequently done, measures of intelligence are said to reflect general capacity (or potential), it is difficult to see how an individual's performance can exceed his potential or "capacity" to perform. That is, how can one do more than he is able to do? One alternative is to assume that academic performance is a function of intellectual capacity plus some motivational variables. This view, however, in no way reduces the dilemma, since the impossibility of exceeding one's capacity remains. Indeed, a serious consideration of this alternative leads inevitably to the conclusion that the only students whose performance approaches their "capacity to perform" are the over-achievers! In this sense, all others--including our high IQ students--are under-achievers.

A second alternative is to question the meaning of the present concept of "capacity" and the instruments used to assess it. If we believe--as seems reasonable--that our present measures of intellectual functioning sample only a small portion of a person's intellectual resources, then the discovery that persons possessing cognitive abilities other than those included in the IQ also do well in school achievement loses some of its mystery, and recourse to some all-explanatory principle called motivation becomes less necessary. To put the general and more important issue another way, the variance in the relationship between intelligence and learning left unexplained by the current correlation of .50 is now most often attributed exclusively to motivational factors. On the basis of the present data--preliminary as it is--we would raise the question whether part of this unexplained variance may not also be attributable to the cognitive functions of the type sampled in our creativity battery but not included in the IQ metric. Having said all of this--and perhaps more sharply than we had intended--we need hardly add that our stated animadversions about the nature of the cognitive abilities sampled by the IQ test, the concept of over-achievement as it is presently applied, and the use of an all-encompassing principoe of motivation to account for over- and under-achievement, *in no way implies that motivational factors are not operative in cognition and learning*. On the contrary, as we shall make clear, general cognitive style and general motivational structure are inextricably related, and can be separated only for analytic purposes.

### Motivation for Achievement

The preceding considerations aside for the present, the question as to whether there *are* differences between our experimental groups in the *specific motive need for achievement* as such requires examination for at least two reasons. First, the issue is of course of interest in its own right--do the two groups differ in Need:Achievement. Second, and perhaps of greater relevance in the immediate context, could the equally superior scholastic achievement of the group with the lower IQ and the group with the higher IQ be accounted for by the greater motivation to achieve of the one group over the other.

Two instruments were used to examine the achievement motivation of our subjects: McClelland's widely-used Need:Achievement measure and Strodtbeck's V-Score, which is less familiar but which had been used with good results in a preceding study on adolescent achievement. The McClelland instrument is a projective device requiring the subject to tell stories to more or less ambiguous pictures, the score being based on the presence or absence of achievement theme in the stories. The Strodtbeck instrument consists of eight attitude statements designed to assess the student's willingness to break home and family ties if necessary in order to attain achievement goals. The relevant data are presented in Table 2.

TABLE 2

Means and Standard Deviations of
Experimental Groups and Total Student Population
Need:Achievement Measure and Strodtbeck's V-Score

| | | High IQ (N = 28) | High Creative[1] (N = 24) | Total Population |
|---|---|---|---|---|
| McClelland's Need:Achievement (T-Scores) | $\bar{x}$ | 49.00 | 50.04 | 49.81 |
| | s | 7.97 | 8.39 | 9.49 |
| Strodtbeck's V-Scores | $\bar{x}$ | 6.28 | 6.42 | 6.11 |
| | s | 1.13 | 1.69 | 1.18 |

[1] Two subjects were omitted from the sample of 26 high Creatives because they failed to furnish data on the McClelland instrument.

It is readily observed that on these two measures of motivation to achieve, the two experimental groups do not differ from each other, nor do they differ from the total student body. Although it should not be assumed that the two measures successfully assess all the motivational factors that might be linked to achievement behavior, the absence of any differences on these instruments suggests that the apparent "over-achievement" of the high Creatives cannot be quickly ascribed to motivational differences alone.

## Perception by Teachers

The answer to one significant question about the behavior of our highly creative and the highly intelligent subjects as students seems quite clear: Despite a twenty-three point difference in IQ and no difference in achievement motivation, they achieve equally well. There is, however, a second question of no lesser significance: Are they also perceived equally well by their classroom teachers?

To answer this question, we asked the teachers to rate all students in the school on the degree to which they enjoy having them in class. The ratings of the two experimental groups were compared with those of the entire school population. The results are presented in Table 3.

The data are quite clear-cut. The high IQ group stands out as being more desirable than the average student, the high Creativity group does not. It is apparent that an adolescent's desirability as a student is not a function only of his academic achievement. Even though the scholastic performance is the same, the high IQ students are preferred over the average students by their teachers, the Creativity students are not. This result is quite striking, for if anything, the reverse should be true. Here is a student--the high IQ one--who is doing scholastically only what can be expected of him. Here is another student--the high Creativity one--who is doing scholastically better than can be expected of him. Yet it is the former rather than the latter who is appreciated more than the average student by his teachers. The reason for this difference in the teachers' reactions is not immediately apparent,

TABLE 3

Means and Standard Deviations of Teacher Ratings
for Experimental Groups and Total Student Population

| Teacher Rating | | High IQ (N = 28) | High Creative[1] (N = 24) | Total Population[2] (N = 449) |
|---|---|---|---|---|
| Desirability | $\bar{x}$ | 11.20* | 10.54 | 10.23 |
| as a student | s | 1.56 | 1.95 | 3.64 |

[1] Two subjects were omitted from the sample of 26 high Creatives because they failed to furnish data on the McClelland Need:Achievement instrument.

[2] For purposes of comparison, the scores of each experimental group were extracted from the total population before T tests were computed.

*Differs significantly from the total population at the .01 level.

and at least two explanations suggest themselves, although there may of course be others.

One reason may derive from the so-called "halo effect" hypothesis. There is probably no information about a child that is potentially more status-setting, especially in school, than is his intelligence quotient. Once the teacher is informed that John "has" an IQ of 165, say, it is difficult for her to behave as she did before his IQ became known. She seems almost duty-bound to admire him and all his works. But if this "halo effect" is helpful in understanding why teachers give better ratings to the high IQ students than to the high Creativity students despite their equal superiority in achievement, it is probably at best only a partial explanation. For one thing, it is unlikely that all IQ's were known to the teachers; and for another, their judgment could also have been influenced by the achievement scores, which, like the IQ, were also available to them on the students' record, and which were of course the same for both groups.

A second and more fundamental reason for the differential reaction of the teachers to the two groups might lie not in the nature of the information held by the teachers (which is at best problematical) but in the nature of the students themselves--their personal values and attitudes, their fantasies, and their long-term aspirations. A study of these might help to explain not only the differential effect of those students on their teachers, but may help us to understand the children themselves as individuals, and consequently also as students. It is to this then, i.e., the study in some depth of the high Creativity and the high IQ adolescents as individuals, that we now turn.

## The Highly Intelligent and the Highly Creative Adolescents as Individuals: their Values, Fantasies, and Aspirations

### Values

The data regarding the values of the two groups were provided by the Outstanding Traits Test. This instrument contained descriptions of thirteen hypothetical children, each description exemplifying a desirable personal quality or trait. For example, one child is described as having the highest IQ in the entire school, another as being the best athlete, another as having the keenest sense of humor, another as being best looking, another as the most creative person in the school, and so on.

The subjects were required to rank these thirteen descriptions of children in three ways as follows: (1) On the degree to which they themselves would like to be like the children, the resulting data providing what might be called the "self-ideal" of our subjects; (2) On the degree to which they believe each of the children with these various qualities would succeed in adult life, the resulting data providing what might be called the "success-image" of our subjects; (3) On the degree to which they believed their teachers would like each of the children, the resulting data providing what might be called the "teacher-perception" of our subjects.

The entire population of the school almost without exception ranked "social skills" first as the quality in which they would like to be outstanding, and "good looks," "high energy level," "athletics," and "health" last. In view of this very high agreement, the responses were re-ranked omitting the uniformly ranked qualities. The findings reported here are on the re-ranked data.

With use of these data, some rather significant comparisons of rankings by the two experimental groups may be observed. By comparing the "self-ideal" ranking with the "success-image" ranking, we may in effect obtain an answer to the question: How success-oriented are the students? That is, are the qualities they value highly for themselves the same as those they believe make for "success" as adults? By comparing the "self-ideal" ranking with the "teacher-perception" ranking, we may in effect obtain an answer to the question: How teacher-oriented are the students? That is, are the qualities they value highly for themselves the same as those they believe teachers value in students? The comparisons yielded the rank-order correlation coefficients presented in Table 4.

The results are again rather clear-cut. For the high IQ students the relationship between the qualities they value for themselves and those they believe lead to "success" as adults is quite close. That is, these students appear to be highly success-oriented. For the high Creativity

TABLE 4

## Rank Order Correlations Among Sub-sections of the Outstanding Traits Test

| Components of Correlations | Subjects | |
|---|---|---|
| | IQ (N = 28) | Creative (N = 26) |
| "Personal traits preferred for oneself" and "Personal traits believed predictive of adult success" | .81 | .10 |
| "Personal traits preferred for oneself" and "Personal traits believed favored by teachers" | .67 | -.25 |

students the relationship between the qualities they value and those they believe lead to "success" as adults is virtually nil. That is, these students appear not to be highly success-oriented (at least not by conventional standards of adult success).

The findings with respect to the teacher orientation of the two groups are equally suggestive. Again, for the high IQ students there is a fairly close relationship between the qualities they would like for themselves and the qualities they believe teachers like in students. Although the relationship is by no means perfect, it nonetheless suggests that high IQ students tend to be at least moderately teacher-oriented. For the high Creativity students the same comparison shows little or no relationship. They are not teacher oriented. Indeed, if anything, there is a slight negative relationship--apparently a tendency for the Creative students to place the highest personal value on qualities which they feel at least in some cases teachers value least.

In summary, the data with respect to personal values as reflected on the Outstanding Traits Test suggest that where the high IQ adolescent wants these qualities he believes make for adult success and the qualities that are similar to those he believes his teachers like, the high Creativity adolescent favors personal qualities having no relationship to those he believes make for adult success and are in some ways the reverse of those he believes his teachers favor.

In addition to interest in their own right, these findings bear directly on the answers to two earlier questions--the one on teacher ratings and the one on the relationship between creativity and school achievement. If the desirability of students in the classroom is related to the congruence or discrepancy between their values and their teachers' values, then in the light of the present data, it is hardly surprising that our high IQ students are more favored by teachers than are our creative students. The high IQ students value and disvalue the same objects and ideals as they believe their teachers do; the high Creativity students do not. And, if the motivational impetus represented by a concern with adult success and a desire to emulate their teachers is absent or weak among the high Creativity students, the observed relationship between creativity and school achievement becomes all the more significant. In any case, the result cannot be attributed to some special kind of motivation like "striving for good grades or success" which it is said leads to so-called "over-achievement."

The question of what accounts for the differences in the success-orientation and teacher-orientation of the two groups is, in effect, the question of how the groups differ in their rankings of the separate sections of the Outstanding Traits Test. Do the high Creatives differ from the high IQ's in their self-ideal, their success-image, their teacher-perception, or in all three? The answer to this question may be obtained by correlating the rankings given by each group under each set of directions. The results are shown in Table 5.

TABLE 5

Rank Order Correlations Between High Creative and
High IQ Students on Three Sections of the Outstanding Traits Test

| | Section of Test | | |
|---|---|---|---|
| | "Self-ideal" | "Success-image" | "Teacher-perception" |
| Size of correlation | .41 | .99 | .98 |

As can be seen in Table 5 the essential difference between the ranking of our two groups lies in their "self-ideal" rather than their "success-image" or their "teacher-perception." In fact, the latter two rankings are practically identical for the two groups. This finding raises the substantive question of which quality or qualities account for the major difference in these two self-ideals. That is, what does the high IQ student highly desire for himself that is not highly desired by the Creative student, or vice versa?

When the data are examined with this question in mind, one of the qualities stands out above all others. This quality is described on the

Outstanding Traits Test quite simply as follows: Here is the student with the best sense of humor in the school. In their self-ideal rankings the Creative students place this quality third out of the thirteen being ranked. The only qualities they give a higher rank to are "getting along with others" (which the entire population ranked first) and "emotional stability." "High marks," "high IQ," "goal-directedness" are all ranked lower. In contrast, in their self-ideal rankings, the high IQ students place "sense of humor" ninth out of the thirteen qualities being ranked. "High marks," "high IQ," "goal-directedness" are all placed higher. Both groups equally rank "sense of humor" ninth among the qualities they believe teachers would like to see in children, and tenth among the qualities they believe will lead to success in adult life.

The prominence of sense of humor in the self-ideal of the Creative adolescent as compared with the high IQ adolescent is very striking, and indeed for no other group that we have studied does sense of humor attain a ranking higher than 7.5. But the saliency of humor for the high Creatives is not only a matter of self-report or choice--of wishful thinking, perhaps--as might be possible on an instrument like the Outstanding Traits Test. Humor pervades all their free-response protocols like the autobiography (to which we shall refer in the clinical studies), and as we shall see directly in the fantasy material.

## Fantasy: Verbal and Non-verbal Imaginative Productions

We have no intention of entering here into the current controversy as to whether fantasy as elicited by projective techniques is or is not, as has been suggested, the "royal road to the unconscious," and hence into the deeper and more stable aspects of personality. We take the position that fantasy or imaginative production as observed in story-telling and picture-drawing is legitimate data for analysis, and that it does have certain advantages: it is not as readily under the "conscious" control of the individual as other assessment data, and it cannot as readily be manipulated as self-report data may be in line with the real or presumed criteria of the examiner. Moreover, story-telling and picture-drawing are, in effect, creative processes and, in the context of the present study, have special merits for observing possible distinctive characteristics of our highly Intelligent and our highly Creative adolescents. We shall then with respect to the fantasy material pose two interrelated general questions: (1) How do the two groups handle a problem requiring them to create something in the verbal realm as represented by a story, and in the non-verbal realm as represented by a picture, i.e., what is the process of the constructive activity; and (2) What is the content of the fantasy or imaginative production, i.e., what is the substance of the constructive activity.

We turn first to the verbal fantasy material. In addition to scoring the Need:Achievement protocols conventionally for the single achievement theme, the results of which have already been presented, we analyzed the total stories. We first sorted "blind" 47 protocols written by creative and non-creative subjects. The blind sorting resulted in only seven misplacements. Using categories suggested by this sorting, we then systematically analyzed the protocols of the two experimental groups. The analysis showed striking differences. The high Creative adolescents were significantly higher than the high IQ adolescents in stimulus-free themes, unexpected endings, humor, incongruities, and playfulness, and showed a marked tendency toward more violence in their stories. The data are presented in Table 6.

## TABLE 6

### Categorization of Fantasy Productions of Highly Creative and Highly Intelligent Group

| Content Analysis Categories | High Creativity[1] (N = 24) Frequency[2] | % | High IQ (N = 28) Frequency[1] | % | $X^2$ |
|---|---|---|---|---|---|
| Stimulus-free theme | 18 | 75 | 11 | 39 | 5.31*[3] |
| Unexpected ending | 22 | 92 | 17 | 61 | 5.05* |
| Presence of humor | 17 | 71 | 7 | 25 | 9.16** |
| Presence of incongruity | 17 | 71 | 10 | 36 | 5.06* |
| Presence of violence | 13 | 75 | 13 | 46 | 3.27 |
| Playful attitude toward theme | 21 | 89 | 9 | 32 | 14.04** |

[1] Two subjects were omitted from the sample of 26 high Creatives because they failed to furnish data on the McClelland Need:Achievement instruments.

[2] Numbers in the frequency column represent the subjects whose fantasy productions fit the corresponding categories.

[3] Yates correction was applied in the computation of chi-squares.

*Significant at the .05 level.

**Significant at the .01 level.

Here, for example, in response to the picture-stimulus perceived most often as a man sitting in an airplane reclining seat returning from a business trip or professional conference, are case-type stories given by a high IQ subject and a high Creative subject.

The high IQ subject: "Mr. Smith is on his way home from a successful business trip. He is very happy and he is thinking about his wonderful family and how glad he will be to see them again. He can picture it, about an hour from now, his plane landing at the airport and Mrs. Smith and their three children all there welcoming him home again."

The high Creative subject: "This man is flying back from Reno where he has just won a divorce from his wife. He couldn't stand to live with her anymore, he told the judge, because she wore so much cold cream on her face at night that her head would skid across the pillow and hit him in the head. He is now contemplating a new skid-proof face cream."

Or one more, in response to the stimulus-picture most often perceived as a man working late (or very early) in an office:

The high IQ subject: "There's ambitious Bob, down at the office at 6:30 in the morning. Every morning it's the same. He's trying to show his boss how energetic he is. Now, thinks Bob, maybe the boss will give me a raise for all my extra work. The trouble is that Bob has been doing this for the last three years, and the boss still hasn't given him a raise. He'll come in at 9:00, not even noticing that Bob had been there so long, and poor Bob won't get his raise."

The high Creative student: "This man has just broken into this office of a new cereal company. He is a private-eye employed by a competitor firm to find out the formula that makes the cereal bend, sag and sway. After a thorough search of the office he comes upon what he thinks is the current formula. He is now copying it. It turns out that it is the wrong formula and the competitor's factory blows up. Poetic justice!"

These stories were written in group sessions, often more than a hundred adolescents in the same room, with the maximum writing time four minutes per story. "Skid-proof face cream!" "Cereal that will bend, sag, and sway!" It is this ability to restructure stereotyped objects with ease and rapidity--almost "naturally"--that seems to us to be the characteristic mark of our high Creative as against our high IQ subjects.

There is one other characteristic, dealing more with the content than the manner, that is well illustrated by a number of the stories. This is a certain mocking attitude on the part of the Creatives toward conformity and toward conventional "success" as represented by what they call the Average Boy--a theme that is almost never mentioned by the high IQ's. Here, for example, are two responses to the stimulus-picture most often perceived as a high-school student doing his homework.

The high IQ subject: "John is a college student who posed for the picture while doing his homework. It is an average day with the usual amount of work to do. John took a short break from his studies to pose for the pictures, but he will get back to his work immediately after. He has been working for an hour already and he has an hour's more work to go. After he finishes he will read a book and then go to bed. This work which he is doing is not especially hard but it has to be done."

The high Creative subject: "The boy's name is Jack Evans and he is a senior in school who gets C's and B's, hates soccer, does not revolt against convention and has a girl friend named Lois who is a typical sorority fake. He is studying when someone entered the room whom he likes. He has a dull life in terms of anything that is not average. His parents are pleased because they have a red-blooded American boy. Actually, he is horribly average. He will go to college, take over his dad's business, marry a girl, and do absolutely nothing in the long run."

Here is another story by a high Creativity adolescent characteristically mocking the "nice" boy, his family-derived ambition, and the triteness of his conventional success:

> Freddie Jones was a nice boy. If you don't believe it just ask him. Freddie came from a theatrical family and wanted to be in show business somehow. However, the only talent he had was a nice smile. He posed for toothpaste ads on T.V. You may think this is kind of low brow, but I see nothing wrong with it. Freddie wanted to satisfy an ambition and he did it the best way in which he could. Freddie will never amount to much but he will be happy. How are you doing?

The answer to our two questions about the process and the content of the imaginative productions of the two groups may be summarized briefly as follows:

1. With respect to the process, the high Creatives tend to free themselves from the stimulus, using it largely as a point of departure for self-expression; the high IQ's tend to focus on the stimulus, using it as the invariant for communication. For the high IQ, the issue is essentially one of conserving what others give to him: If the picture-stimulus is of a man in an airplane, he must tell a story about travel; if the picture-stimulus is of a man in an office, he must tell a story about work. For the high Creative, the issue is essentially one of constructing what he wants to give: the picture-stimulus may be of a man in an airplane, but the story he wants to tell is about a divorce; the picture-stimulus may be of a man alone in an office, but the story he wants to tell is of a private-eye in a cereal factory.

2. With respect to the content (and of course the distinction between process and content being made here is only for analytic purposes), the fantasies of the high Creativity adolescents contain at once more wit and more violence. They seem more expressive than do the fantasies of the high IQ's of impulses from within that are frequently inhibited, and descriptive of experiences from without that are often denied. The high Creativity adolescent has a more playful--or if you will, more experimental--attitude

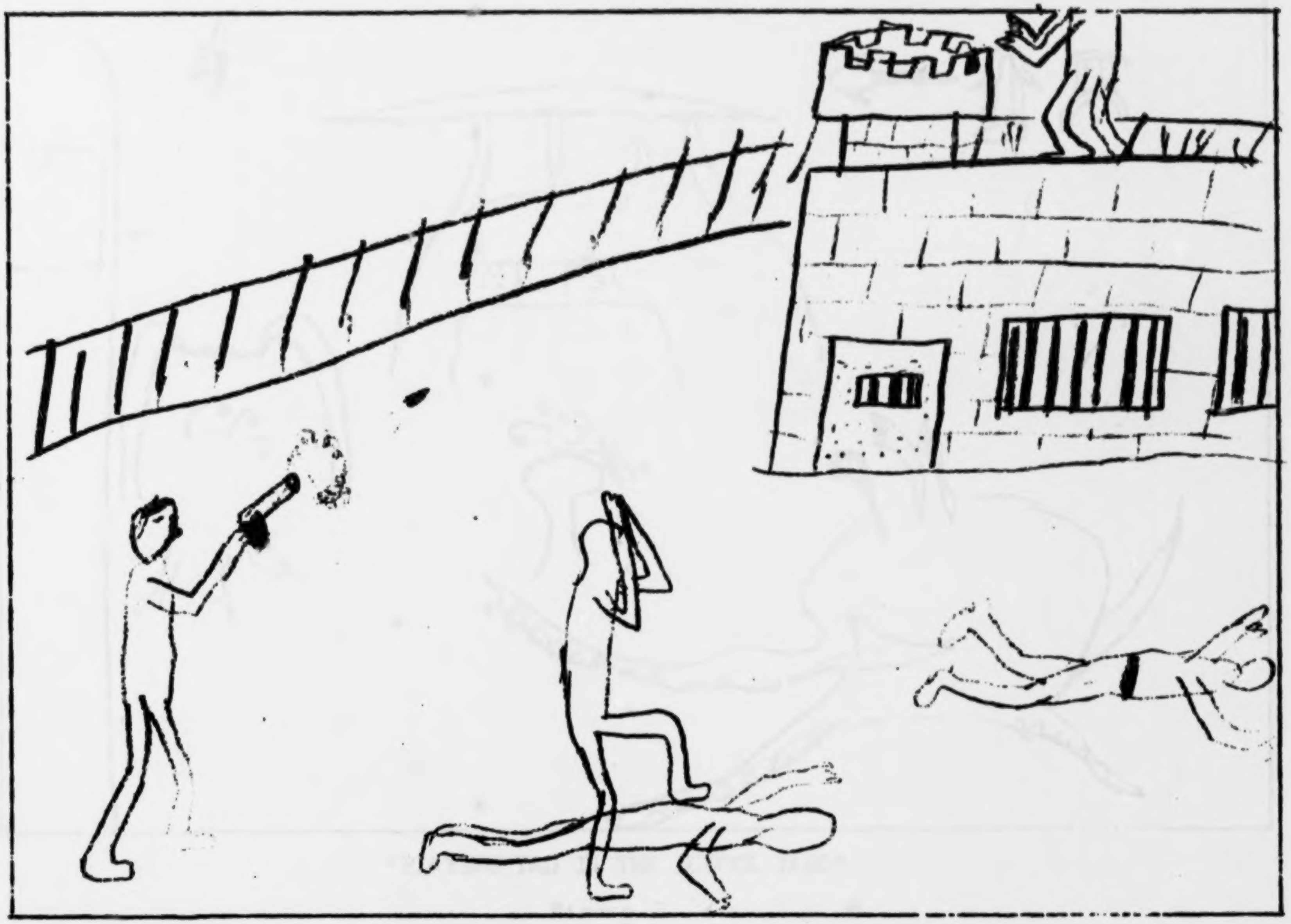
toward conventional ideas, objects, and qualities. Instead of dealing only in pre-determined categories, as the high IQ adolescent is likely to do, he tends to use categories which he himself originates. Cereal does not only snap, crackle, and pop, it can also bend, sag and sway. Face cream does not only skid, it can also be skid-proof. The attainment of an ambition can mean not only success, it can also be just plain silly.

In view of the striking differences between the two groups in their verbal imaginative productions, it seemed appropriate to examine the nature also of their non-verbal imaginative productions. The data relevant to this issue were provided by drawings produced by the two groups. The test instrument was a sheet of paper with a printed single-lined border approximately 5½ by 7½ inches for framing a picture. Under the border was the title "Playing Tag in the School Yard." At the top of the paper above the border were the following directions: "In the space below, draw a picture appropriate to the title 'Playing Tag in the School Yard.' You may draw any picture you like--whatever you may imagine for this theme." The paper was distributed with other test materials and the subjects were told they could work on their drawings whenever they wished in the free time between the administration of the several other tests, or if they preferred at the end of the testing period. In any case, there was no time limit or any other directions. The resulting drawings provided the "non-verbal imaginative productions" for the present analysis.

Even the first cursory look through the drawings of the two groups showed unmistakable and compelling differences. Here was a picture drawn by one of the high Creatives portraying a prison yard with guards apparently chasing ("playing tag with") the prisoners (Figure 1). Here was another, again by one of the high Creatives, apparently portraying a school of

NAME [illegible] GRADE [illegible] DATE [illegible]

Directions: In the space below, draw a picture appropriate to the title, "Playing Tag in the School Yard." You may draw any picture you like - whatever you may imagine for this theme.

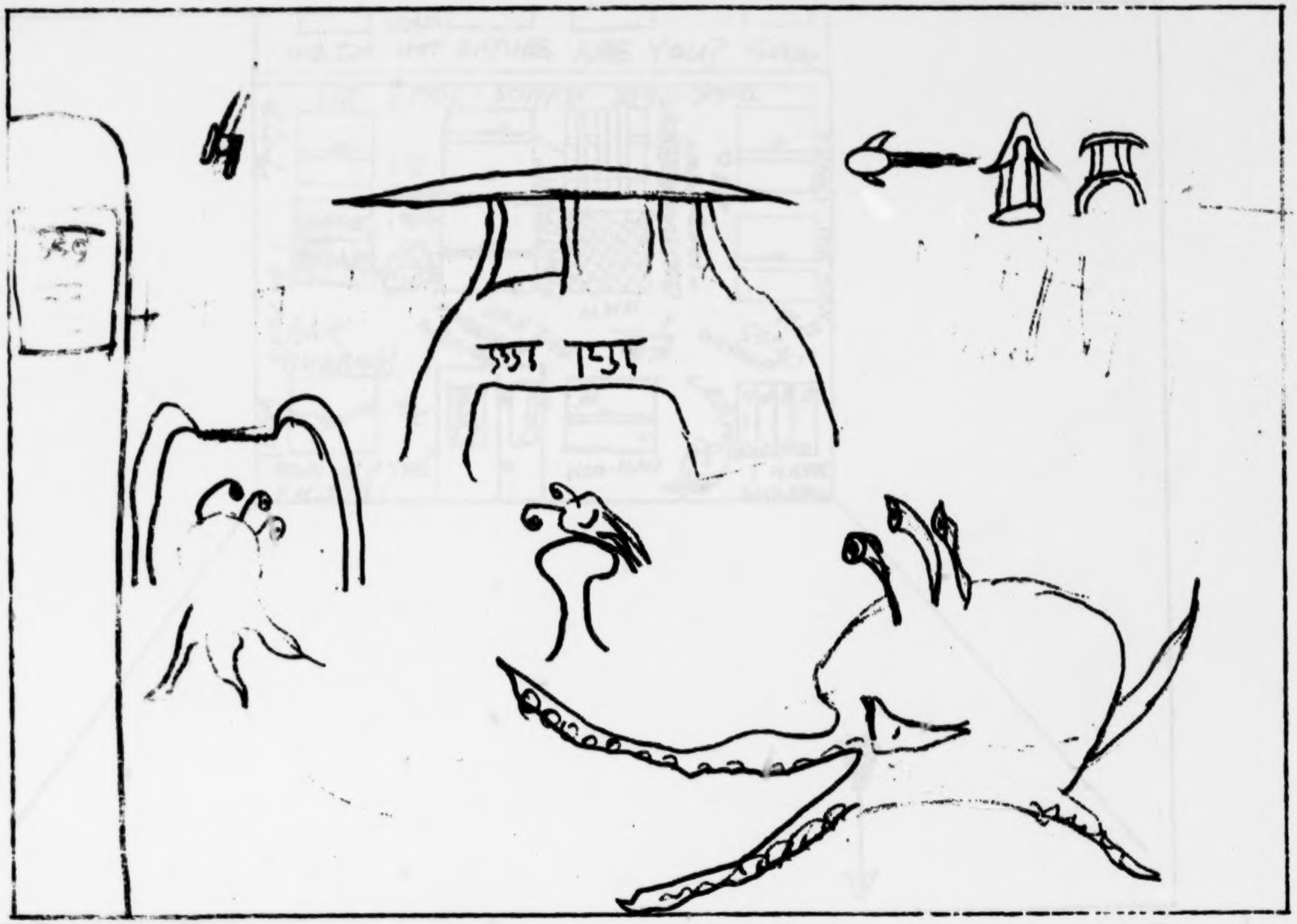


"PLAYING TAG IN THE SCHOOL YARD"

Figure 1

NAME ______________ GRADE ______________ DATE ______________

**Directions:** In the space below, draw a picture appropriate to the title, "Playing Tag in the School Yard." You may draw any picture you like - whatever you may imagine for this theme.

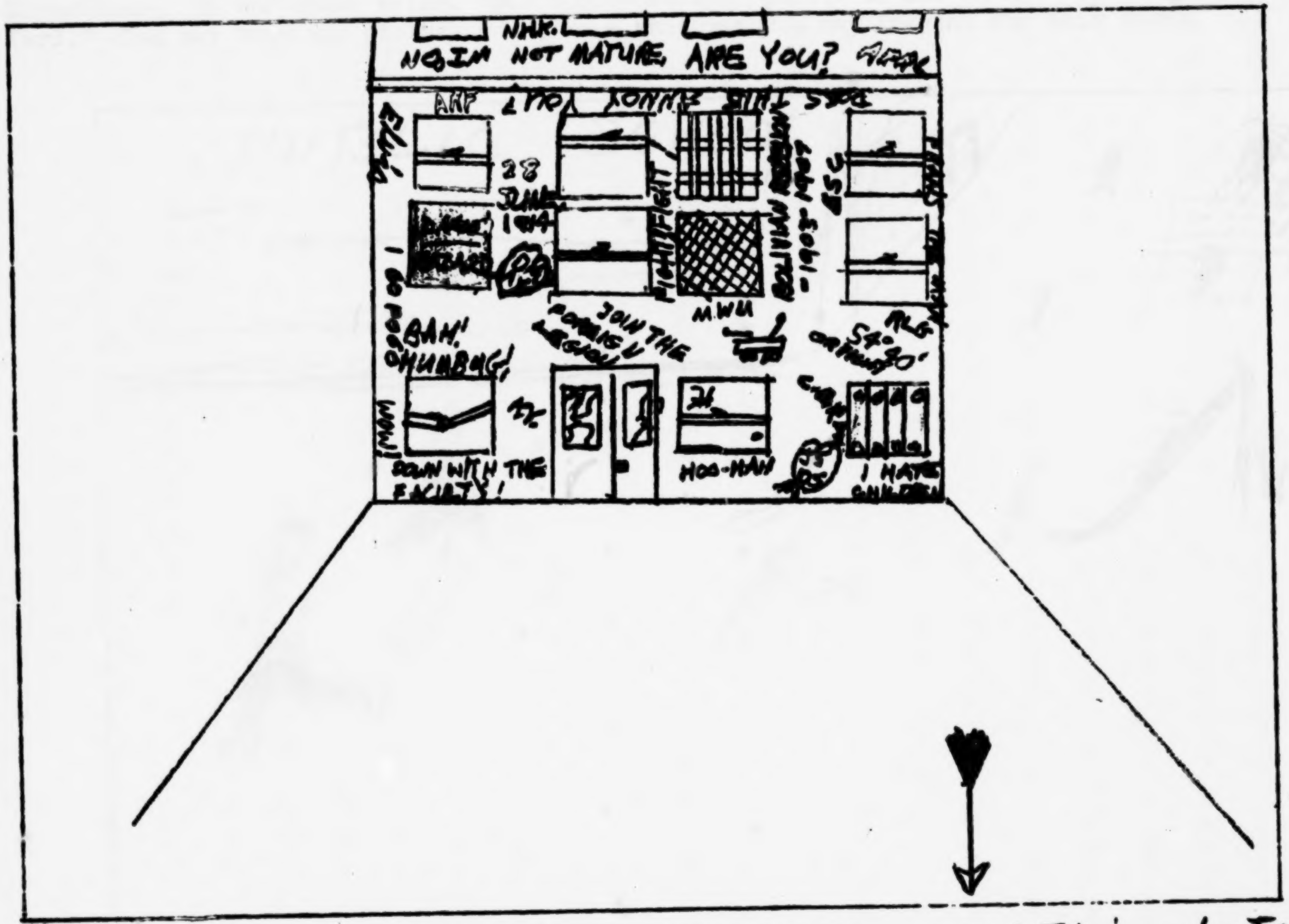


"PLAYING TAG IN THE SCHOOL YARD"

Figure 2

NAME [illegible] GRADE [illegible] DATE [illegible]

**Directions:** In the space below, draw a picture appropriate to the title, "Playing Tag in the School Yard." You may draw any picture you like - whatever you may imagine for this theme.


NHR.
NO I'M NOT MATURE, ARE YOU?
Elvis
28 JUNE 1914
FIGHT FIGHT
M.W.U.
JOIN THE FORMIS U LEGION
BAH! HUMBUG!
I GO POGO
WOW!
DOWN WITH THE FACISTS!
HOO-HAH
R.L.G.
54°40' OR FIGHT
I HATE CHILDREN
ESC
1903-1907

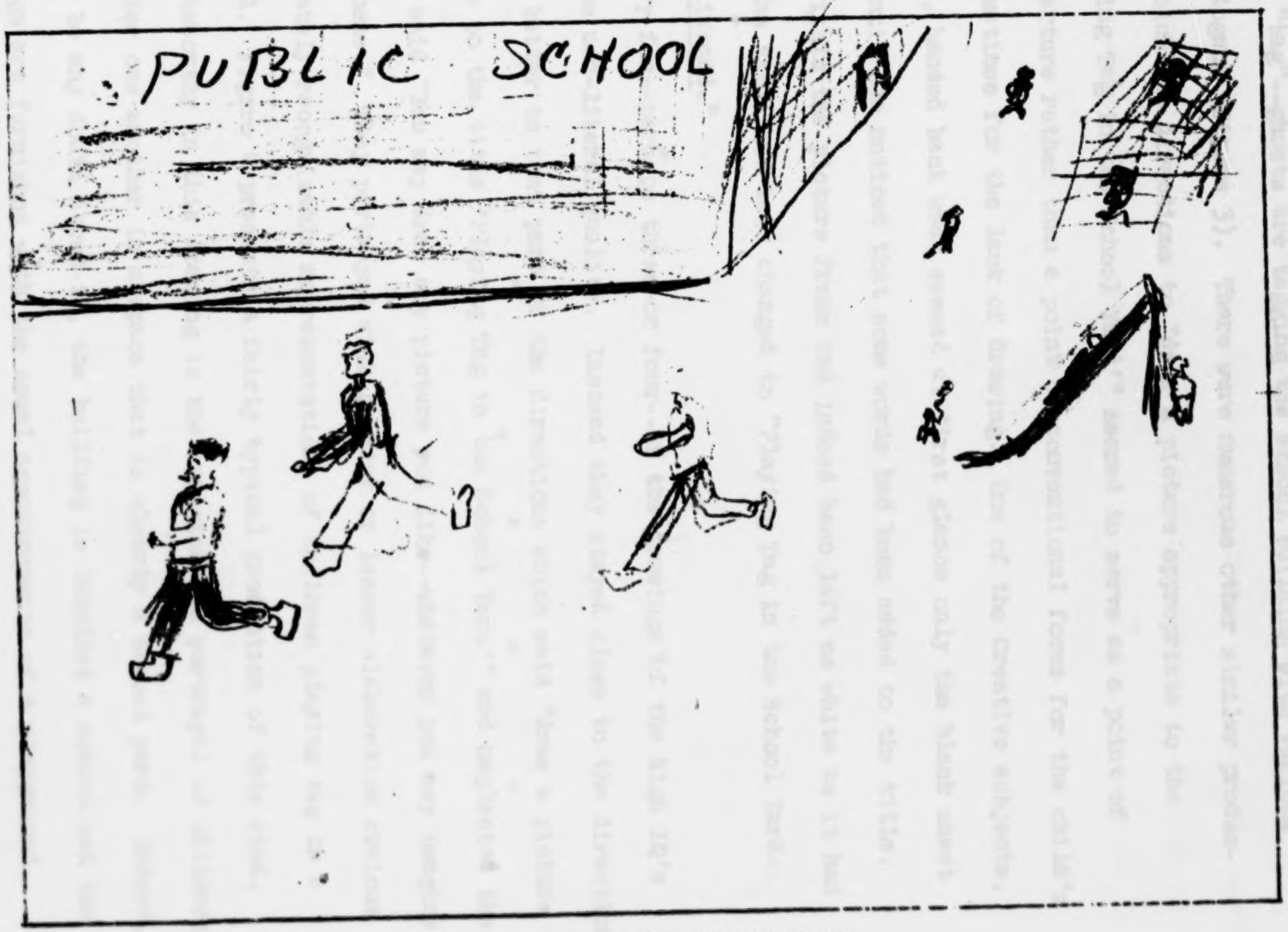
note: It is ghosts who are playing Tag.

"PLAYING TAG IN THE SCHOOL YARD"

Figure 3

NAME ______ GRADE ______ DATE ______

**Directions:** In the space below, draw a picture appropriate to the title, "Playing Tag in the School Yard." You may draw any picture you like - whatever you may imagine for this theme.



"PLAYING TAG IN THE SCHOOL YARD"

Figure 4

fantastic fish or space objects following one another (Figure 2). Here was yet a third picture, a quite elaborate one, which seems to be a play on the word "tag"--ghosts are tagging the school building with various signs and slogans (Figure 3). There were numerous other similar productions for which the directions to "draw a picture appropriate to the title 'Playing Tag in the School Yard'" seemed to serve as a point of playful departure rather than a point of conventional focus for the child's drawing--sometimes for the lack of drawing. One of the Creative subjects, for example, handed back what seemed at first glance only the blank sheet of paper--until one noticed that some words had been added to the title. The space within the picture frame had indeed been left as white as it had been, but the title had been changed to "Playing Tag in the School Yard--During a Blizzard."

Very few--perhaps three or four--of the drawings of the high IQ's had the same non-literal quality. Instead they stayed close to the directions, or perhaps better to that part of the directions which said "draw a picture appropriate to the title 'Playing Tag in the School Yard'" and neglected the part which said "You may draw any picture you like--whatever you may imagine for this theme." They portrayed with greater or lesser elaboration obvious and immediately recognizable representations of children playing tag in a school yard. Figure 4 presents a fairly typical production of this kind. What is noteworthy in this drawing is the unmistakable portrayal of children running after one another in a space that is clearly a school yard. Indeed, lest there be any doubt about it, the building is labelled a school and the surroundings are furnished with the usual accoutrements of a playground.

A closer analysis confirms the first impressions. The pictures can be classified as stimulus-bound, i.e., the subject tries to represent quite literally "Playing Tag in the School Yard," or as stimulus-free, i.e., the subject departs from the literal representation of "Playing Tag in the School Yard." An example of the former is the picture of children running after one another (Fig. 4); an example of the latter is the prison (Fig. 1) or the ghost (Fig. 3) pictures. When the drawings of the high Creativity and the high IQ subjects are classified into these categories, the relationship summarized in Table 7 is obtained.

TABLE 7

Stimulus-free vs. Stimulus-bound Drawings by the High IQ and the High Creativity Groups

| | High IQ (N = 28) | High Creativity (N = 26) | $X^2$ | P |
|---|---|---|---|---|
| Stimulus-free | 4 | 13 | 7.97 | .01 |
| Stimulus-bound | 24 | 13 | | |

Table 7 does not quite adequately represent a number of the more subtle differences in the drawings of the two groups. There was no difficulty in categorizing the pictures of the high IQ group as 4 stimulus-free and 24 stimulus-bound. There was considerable difficulty in categorizing the pictures of the high Creative group, for even the apparently stimulus-bound pictures were not quite as clearly in this category as were the similar pictures of the high IQ group. Many of the high Creativity pictures, although following the directions quite closely, still tended not to be just straight representation. Among the stimulus-free drawings, the "blizzard" picture is an obvious attempt at humor, and the "ghost" picture an obvious pun on the word "tag." But many of the more stimulus-bound drawings also have this same humorous "twist." For example, there is a picture of one individual chasing another in what is obviously a playground, but the individual being chased seems to be held back by an "I Like Ike" sign dragging at his feet; or again, a dog seems to be chasing a child who is in turn chasing another child. When the pictures are classified into "humor-present" and "humor-absent" categories, the relationship between the high IQ and the high Creativity drawings may be summarized as in Table 8.

TABLE 8

Humor-present vs. Humor-absent in the Drawings of the High IQ and the High Creativity Groups

| | High IQ (N = 28) | High Creativity (N = 26) | $\chi^2$ | P |
|---|---|---|---|---|
| Humor-present | 5 | 14 | 7.66 | .01 |
| Humor-absent | 23 | 12 | | |

In addition to the differences in "freedom" and in "humor" in the pictures of the two groups, there is a third significant difference to be noted, that is, the more frequent expression of aggression and violence in the drawings of the high Creatives as compared with the high IQ's (see, for example, Fig. 1). The data are presented in Table 9.

### TABLE 9

### Violence-present vs. Violence-absent Drawings of the High IQ and the High Creativity Groups

| | High IQ (N = 28) | High Creativity (N = 26) | $X^2$ | P |
|---|---|---|---|---|
| Violence-present | 1 | 9 | 8.61 | .01 |
| Violence-absent | 27 | 17 | | |

Two other trends in the data, which though not statistically significant, are sufficiently consistent and strong to be worth observing. The representation of the space as a school yard by including or failing to include the concrete details of a conventional school yard or playground, i.e., jungle gyms, see-saws, flagpole, slides, etc., has already been mentioned. Pictures without such objects may be called "detail-free"; pictures with such objects "detail-bound." When the drawings are classified in this way, the relationship summarized in Table 10 is obtained.

### TABLE 10

### Detail-free vs. Detail-bound Drawings of the High IQ and the High Creativity Groups

| | High IQ (N = 28) | High Creativity (N = 26) | $X^2$ | P |
|---|---|---|---|---|
| Detail-free | 11 | 16 | 2.67 | 15-.10 |
| Detail-bound | 17 | 10 | | |

The same trend toward a greater "concern with details" or "concreteness of representation" on the part of the high IQ's as compared with the high Creatives is obtained by observing the number of drawings in which the building is specifically labelled a school, a kindergarten, or some such (see, for example, Fig. 4). The data are presented in Table 11.

TABLE 11

Building-labelled vs. Building-unlabelled Drawings of the high IQ and the high Creativity Groups

| | High IQ (N = 28) | High Creativity (N = 26) | $\chi^2$ | P |
|---|---|---|---|---|
| Building-labelled | 11 | 5 | 2.60 | 15-.10 |
| Building-unlabelled | 17 | 21 | | |

In summary, it seems clear that there are at least three global differences between the non-verbal imaginative productions of the high IQ and the high Creativity adolescents: (a) The high Creatives are more stimulus-free. They tend to structure the task in their own terms, not only to comply with it in the terms that are given. As a corollary, they are less bound by the specific details of the instructions. They do not, for example, feel compelled, as the high IQ's do, to include the conventional playthings of a school yard or to label the building a school, just because the title is "Playing Tag in the School Yard." It is as if the high IQ's were unable or at least unwilling to risk the possibility of error or of being misunderstood. The high Creatives did not seem to worry about such risks. In a sense, they seemed to be using their own imagination, and were willing to leave something to the imagination of others. (b) The high

Creatives tend to be more fanciful and humorous. Indeed, some of their pictures seem to be rather esoteric fantasies or elaborate pictorial puns, apparently intended as much for their own enjoyment as anyone else's.

(c) The high Creatives tend to express more aggression and violence.

The similarities in these data to the stories written by the two groups are self-evident. In both the non-verbal imaginative productions and the verbal imaginative productions, the high Creativity adolescents tend to make greater use of stimulus-free themes, humor, and aggression. "Skid-proof face cream!" "Cereal that will bend, sag, and sway!" "A school playground that becomes a prison yard!" "A white space that represents playing tag in a blizzard!" It is this ability to restructure stereotyped objects and notions with ease and rapidity--almost "naturally"--that remains the characteristic mark of the high Creativity as against the high IQ subjects in the non-verbal imaginative productions as it had been in the verbal imaginative productions. Precise quantitative comparison between the verbal and non-verbal material must of course be made with caution, since the non-verbal data are based on only one drawing, the verbal data on six stories. Nonetheless, the general trends in these findings are clear and compelling.

## Career Aspirations

In attempting to study the distinctive characteristics of our highly Creative and our highly Intelligent adolescents, we have so far examined certain aspects of their achievement in school, their motivation for achievement, their effect on teachers, their values and attitudes, their fantasy life, and their imaginative productions. To round out the portraits, we needed also to gain some insight into their ultimate goals and aspirations, at least as represented by their occupational and career choices.

The relevant data were obtained from the responses to three instruments, the first two administered to the students themselves, the third to their parents.

The two student instruments were the direct and the indirect forms of the Sentence Completion Test. Among the sixty items comprising the direct form were such career preference stubs as "If the choice of a permanent occupation were left up to me, I would choose..." The students were required to respond "directly" to these items by completing each sentence stub so as to "reflect his own preference." The items of the indirect form were exactly parallel, except that each sentence stub was written in the third person, e.g., "If the choice of a permanent occupation were left up to him (her), Ken (Kate) would choose..." The students were required to respond "projectively" by completing the stubs as a "verbal speed test." The responses of the two groups to the two forms were analyzed for the number and kind of occupations mentioned. The parent instrument was the Parent Questionnaire, which included two questions regarding their children's occupational goals as follows: "Has the pupil expressed interest in a particular career? If yes, specify..." These responses were also analyzed for the number and kind of occupation mentioned.

The data from the Sentence Completion Tests are presented in Table 12. Differences between the two groups appear both in the quantity and quality of occupational goals. The quantity of occupational possibilities mentioned is significantly greater for the high Creatives than for the high IQ's, the latter group mentioning an average of 1.82 different occupations on the Direct Sentence Completion Test and 3.57 on the Indirect Test, the former group mentioning an average of 2.61 and 5.00 on the respective

TABLE 12

Quantity and Quality of Occupations Mentioned by the Experimental Groups on Direct and Indirect Sentence Completion Tests

| Test | Group | Number of Occupations Mentioned | | | Unusual Occupations | |
|---|---|---|---|---|---|---|
| | | Total | $\bar{X}$ | s | Number Mentioned | Number of Subjects Mentioning |
| Direct | IQ (N = 28) | 51 | 1.82* | 1.09 | 6 | 5** |
| | Creative (N = 26) | 68 | 2.61* | 1.41 | 24 | 16** |
| Indirect | IQ (N = 28) | 100 | 3.57** | 1.81 | 12 | 10* |
| | Creative (N = 26) | 130 | 5.00** | 1.80 | 29 | 17* |

t used to test differences between means in Column 2.

$X^2$ used to test differences between frequencies in Column 5.

* Significant at .05 level.

** Significant at .01 level.

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instruments. The quality of the different occupations mentioned as possibilities is also significantly different for the two groups. When the occupations mentioned are analyzed into conventional (lawyer, doctor, professor) and unconventional (adventurer, inventor, writer) categories, it is found that the high Creatives give a significantly greater proportion of unconventional occupations than do the high IQ's. For example, on the Direct Sentence Completion Test, 16% of the high IQ's mention an unconventional occupation, 62% of the high Creatives mention at least one such occupation as a possibility.

The preceding findings based on the reports of the adolescents themselves are amply supported by the data from the Parent Questionnaire. Parents of 24 of the high IQ children and of 24 of the high Creativity children responded to the Questionnaire. Sixteen of the high IQ parents and 20 of the high Creativity parents reported that their children had expressed an interest in some career. What is most noteworthy in these reports is that 12 of 75% of the high IQ parents mention occupations falling into but five career categories: engineering and architecture, science, medicine, law, and teaching; only 7 or 35% of the high Creativity parents mention career choices falling exclusively into these five categories ($X^2 = 5.71$, $p < .02$). Instead, the high Creativity parents tend to mention such rather unconventional occupations as "veterinary" or "entertainer," such unresolved combinations as "law or music," "teaching or art," and such expressive professions as "writing" or "dancing," none of these latter being mentioned as possibilities by the parents of the high IQ children.

In short, with respect to the quantity of occupations considered, depending on one's point of view, one may say that the high Creativity adolescents as compared with the high IQ adolescents are more "diffuse" in occupational goals or that they are "more able and willing to deal with a greater range of career possibilities." With respect to the quality of occupations considered, again depending on one's point of view, one may say that high Creativity adolescents are more "eccentric" in their occupational goals, ore that they are "more able and willing to deal with career risks, that is, to take greater liberties with accepted standards of adult success." In connection with this last alternative, attention may be directed to the previously reported Outstanding Traits values data. It will be recalled that it was the high IQ group that was more conventionally success-oriented in their personal values, and that it was the high Creativity group that was less conventionally success-oriented in their personal values, a general attitudinal finding that is now supported by their specific occupational and career choices.

There is one feature of these occupational data, which although tangential to the immediate problem of the distinctive career aspirations of the two groups, seems to us of considerable theoretical significance, or at least suggestiveness. This is that the high Creatives give essentially the same number of unusual occupations in their "direct" (or self-report) and their "indirect" (or projective) responses, while the high IQ's give twice as many unusual occupations in their "indirect" (or projective) responses as they do in their "direct" (or self-report) responses. Or to point to another aspect of the data, 16 of the highly Creative adolescents give unconventional occupations on the direct instrument and 17 on the indirect instrument; only 5 of the highly Intelligent adolescents give any unconventional occupations on the direct instruments but 10 give unconventional occupations on the indirect instrument.

These empirical findings are clearly in line with the psychoanalytic proposition by Kubie, among others, pointing to greater "flux" or movement of pre-conscious material into the conscious expression of the creative person, and the relative restriction of such movement in the more highly "intellectualized" person. The data are also in line with the observation by Rogers that the creative person is more "open" in his self-expression than the non-creative person, who, to protect the organization of the self and his relation to others, may resort to "defensiveness." And of course, the data are consistent with our own findings of greater acceptance and expression of impulse in the fantasy and imaginative productions of the highly Creative than of the highly Intelligent adolescents.

Indeed, the striking consistency--or at least inter-relatedness--of the different kinds and levels of data obtained from the two groups is well worth noting here, if it is not already clearly apparent. To mention as instances only several of the more obvious relationships, there is, for example, the greater personal orientation of the high IQ's than of the high Creatives toward the "values that make for adult success," and the more frequent choice of conventional careers (like doctor or lawyer) by the one as against the other. There is similarly the greater personal orientation of the high IQ's than of the high Creatives toward the "values they believe favored by their teachers," and the greater acceptance by the teachers themselves of the high IQ's as against the high Creatives. Perhaps even more directly, there is the greater valuation placed on sense of humor by the highly Creative group than by the highly Intelligent group, and the more frequent appearance of humor in the fantasies of the one as against the other. In this connection, it is perhaps worth noting again the extraordinary consistency between the verbal and the non-verbal imaginative productions of the two groups. And, as we have just seen, there is the consistency between the impulse expression in the imaginative production of the high Creatives and the homogeneity of their "self-report" and "projective" career aspirations, and the consistency between the impulse inhibition in the imaginative productions of the high IQ's and the heterogeneity of their "self-report" and "projective" career aspirations.

We shall return to the implications of these consistencies and our overall results in due course. Here we want only to summarize briefly the findings to this point: (1) On the basis of measures of so-called "intelligence" and so-called "creativity," we were able to identify two groups of adolescents representing two types of cognitive giftedness, the one group very high in "intelligence" but lower in "creativity," the other very high in "creativity" but lower in "intelligence"; (2) When they were so differentiated, despite a variation of 23 points in IQ, the two groups were found to be equally superior in scholastic achievement to the population from which they were drawn, but they themselves differed significantly in a number of social-personal variables including perception by their teachers, their values and attitudes, their fantasies and imaginative productions, and their career aspirations; (3) The data with respect to both the cognitively-oriented and the socially-oriented behavior were found to be consistent, and the characteristics that describe the one describe the other. The high IQ's seem to converge upon stereotyped meanings, to perceive personal success by conventional standards, to move toward the model provided by teachers, to seek out careers that conform to what is expected of them. The high Creatives seem to diverge from stereotyped meanings, to move away from the model provided by teachers, to seek out careers that do not conform to what is expected of them.

So far as the intent of the basic inquiry is concerned, i.e., (a) the possibility of identifying two groups of adolescents differing significantly in type of cognitive giftedness as represented by the conventional IQ metric on the one hand and creativity measures on the other and (b) observing the concomitant distinctive characteristics of the two groups as differentiated, the indicated findings seem clearly relevant and responsive. But we could not leave the general problem without inquiring, however tentatively, into the developmental background, if not precise etiology, of our highly Intelligent and our highly Creative adolescents. Accordingly, without in any way denying the possibility of genetic factors, we set ourselves the third issue for investigation, which we may now put as follows: Granting the systematic differences in the cognitive and social-psychological functioning of the highly Intelligent and the highly Creative adolescents, *do the two groups also vary systematically in the nature of their family environments?* We turn now to this concluding question about our adolescents, i.e., as members of their respective families.

## The Highly Intelligent and the Highly Creative Adolescent as Members of the Family Group: Selected Parental Variables

The data with respect to the family environment of the two groups were obtained from two sources. One was the *Parent Questionnaire*, a mailed check-list and short-answer instrument, requiring parents to respond to certain specific questions (such as age and education) regarding themselves and their children. The other was the *Parent Interview*, a two to three hour free-response conference held at home with the mother, except in one case where the mother was unavailable, the father consenting to serve instead. At the time of the interview the parents of five other experimental groups were also being studied, and of course the interviewers did not know to which of the seven groups any interviewee belonged. Interviews were obtained from approximately 85% of the mothers of the highly Intelligent and the highly Creative adolescents. The analysis of the data may be discussed with reference to each of the following family variables:

1. Education and occupation of the parents.
2. Age of the parents.
3. Mother's recollection of her own family situation when she was her child's age.

4. Reading interests of the family, at least as represented by the number and type of magazines taken.
5. Parental satisfaction and dissatisfaction with the child and his school.
6. Parental satisfaction and dissatisfaction with their own child-rearing practices.
7. Mother's description of the kinds of friends preferred for her child.

## Education and Occupation of Parents

Educational data were available for the parents of 24 of the 28 high IQ's and for 24 of the 26 high Creatives. When these data were analyzed by simply dichotomizing college graduates versus others, the result obtained could be summarized as in Table 13.

TABLE 13

Number of College Graduates Among

Fathers and Mothers of the Two Experimental Groups

| | Number of College Graduates | | | |
|---|---|---|---|---|
| | IQ (N = 24) | Creative (N = 24) | $X^2$ | p[1] |
| Father | 21 | 15 | 4.0 | .05 |
| Mother | 16 | 12 | 1.37 | N.S. |

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[1] Because of the exploratory nature of this phase of the research many of the comparisons presented here were derived from the obtained data. Therefore, the probability values attached to the chi-squares in this and the following tables must be viewed with caution.

TABLE 14

## Number of Parents Having Some Graduate Training

| | Parents Having Graduate Training IQ (N = 24) | Parents Having Graduate Training Creative (N = 24) | $X^2$ | P |
|---|---|---|---|---|
| Father | 19 | 13 | 3.38 | .10 |
| Mother | 13 | 5 | 5.69 | .02 |

The children in the school under study come in large part from families who are in the employ of an urban university, or from families who although not employed by the university prefer to reside in or near the university community. As Tables 13 and 14 indicate, whichever analysis is undertaken, it seems that the parents of the high IQ child tend to have higher educational status than the parents of the high Creativity child. But what is perhaps more noteworthy is the greater specialized training of both the mother and the father of the high IQ's. The essential difference is probably not so much in the general level of cultivation, which is very high for both groups when compared to the general population, but in the significantly greater specialization of training or, if one will, "professionalization of education" of the IQ group.

In this connection, the occupational data are relevant. The data for fathers are presented in Table 15 and for mothers in Table 16.

## TABLE 15

### Occupational Status of the Fathers of the Two Experimental Groups

| Occupational Status | IQ (N = 24) | Creative (N = 24) | $X^2$ | P |
|---|---|---|---|---|
| University Teaching, Research, Editing | 15 | 7 | 6.15 | .02 |
| Business | 4 | 11 | | |
| Medicine, Law | 5 | 6 | | |

## TABLE 16

### Occupational Status of the Mothers of the Two Experimental Groups

| Occupational Status | IQ (N = 24) | Creative (N = 24) | $X^2$ | P |
|---|---|---|---|---|
| Housewife only | 18 | 11 | 4.27 | .05 |
| Full or Part-time Employment | 6 | 13 | | |

It appears that we are dealing not only with two different types of children but with two different types of parents. As might be anticipated from the data on educational status, a greater proportion of the high IQ fathers than of the high Creativity fathers are found in the academic or educational occupations. But it is noteworthy that despite their greater professional training, a greater proportion of the mothers of the high IQ children than of the high Creativity children are exclusively housewives, and do not hold other full or part-time jobs. It would seem that the mothers of the high IQ subjects have more time to devote to their children than do the mothers of the high Creative subjects. In this connection, it will be shown from other sources of data that the high IQ mothers are in fact likely to be more vigilant about the "correct" upbringing of their children than the high Creativity mothers.

## Age of Parents

The mean age is almost exactly the same for the two groups of mothers, and although the age of the fathers tended to be slightly greater for the high IQ group than for the high Creativity group, it was not significantly so. The significant and striking difference between the two groups was in the discrepancy or congruence between the age of the father and the mother. If the data are dichotomized as one year or less age difference and two years or more age difference, the results may be summarized as in Table 17.

TABLE 17

Age Difference Between Parents

For the Two Experimental Groups

| Age Difference between Parents | IQ (N = 24) | Creative (N = 24) | $X^2$ | P |
|---|---|---|---|---|
| 0 - 1 years | 4 | 13 | 7.38 | .01 |
| 2 or more years | 20 | 11 | | |

We may only conjecture at this time about the reasons for the age discrepancies or similarities between the parents of the present sample, and about the effects of these age factors on the family environment. But two reasons for a number of the discrepancies seem relevant: waiting to finish advanced academic training before risking marital responsibilities, and waiting to be satisfactorily "settled" to maintain a family in the "right" style. Both reasons suggest an apparently greater insecurity among the high IQ parents than among the high Creativity parents, a suggestion that is also supported by subsequent interview data.

Mother's Memories of Own Home

The relevant interview question was: How would you describe the home you lived in as a child? The responses were long and detailed--the mothers seemed to enjoy relating their own real or imagined childhood experiences to their children's present situation. Here, for example, is a fairly typical response by one of the IQ mothers:[1]

> It was as typically Midwestern middle class American as one could find. Neither rich nor poor . . . The family belonged to a group of people important in town. Father was the principal of the school--active in church and in the literary group. His was a large family, and there were many homes we could go to. Father died when I was thirteen. Mother began teaching school. We thought more about money. Then I worked while in college. I have some doubt about that--traumatic insecurity, especially financially. So abnormally thrifty ever since--keeping magazines . . . I hope children won't miss these highlights of our life even if disasters. . .

The problem of quantifying this kind of material is of course formidable, and many differences that one "feels" as one reads the complete sets of interviews "wash out" as one attempts to categorize. Nonetheless, certain categorical differences may be noted. For example, 7 or the 22 IQ mothers for whom interview material is available say specifically of their home that it was "middle class," and only 1 of the 18 Creative mothers for whom interview material is available says this; eight of the 22 IQ mothers describe their family in rather global-emotional terms, 12 of the 18 Creative mothers seem to do this. That is, the IQ mothers tend to be more

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[1] Here and throughout the paper the mother's statements are taken from notes recorded during the interview. The present quotations have been altered in irrelevant details to maintain anonymity.

"stereotypic" in their descriptions (they tend to put themselves in "classes"); the Creative mothers attempt rather more rounded descriptions.

But the chief categorical difference lies in their reference to the financial status of their home and childhood. As the data in Table 18 show, the high IQ parents tend not only to mention finances significantly more often than the high Creativity parents, but to emphasize financial hardship more often. Whatever else these responses imply about the different remembrance of things past and areas of latest concern, they do tend to support the suggestion of greater insecurity among the parents of the high IQ children than among the parents of the high Creativity children.

TABLE 18

Mention of Financial Status and of Poverty in Descriptions of Own Home Life by Mothers of the Two Experimental Groups

| | IQ (N = 22) | Creative (N = 18) | $\chi^2$ | P |
|---|---|---|---|---|
| Mention of Finances | 16 | 7 | 4.64 | .05 |
| Emphasis on Poverty, financial hardship | 9 | 1 | 4.84* | .05 |

* Yates' correction applied.

## Reading Interests in the Home

It is almost impossible to obtain an exact measure of the reading habits of a family. Nonetheless, an attempt toward a partial assessment was made by asking the following interview questions: What magazines and newspapers do you subscribe to or buy regularly? What magazines do you read just once in a while?

In the analysis, professional or scholarly journals, which would have increased the count for the high IQ parents, were omitted. Despite this, there was a difference in the number of magazines coming into the homes of the high IQ and high Creativity subjects, a difference that is quite illuminating.

The 22 high IQ families reported reading "regularly" a total of 125 magazines, and "sometimes" 54 magazines. The 18 high Creative families reported reading "regularly" a total of 107 magazines, and "sometimes" 30 magazines. The respective means were 8.14 for the high IQ's and 5.94 for the high Creatives. If the families are divided into those mentioning 6 or fewer and those mentioning 7 or more magazines, the relationship portrayed in Table 19 is observed.

TABLE 19

Number of Magazines "Taken" or Read in Homes of the Two Experimental Groups

| Number of Magazines | IQ (N = 22) | Creative (N = 18) | $X^2$ | P |
|---|---|---|---|---|
| 6 or fewer | 7 | 12 | 4.34 | .05 |
| 7 or more | 15 | 6 | | |

There seem to be significant quantitative differences between the two groups. There are also some noteworthy qualitative trends in the data. For example, 21 of the 22 high IQ mothers report taking or reading 50 "Mass Media Magazines" (Time, Life, Newsweek, Reader's Digest). This is about 28% of their total. Sixteen of the 18 high Creative mothers report taking or reading 27 "mass media magazines," which is about 19% of their total. Conversely, 5 of the 22 high IQ mothers mention 7 "magazines of liberal political comment"

(Reporter, Nation, New Republic)--i.e., about 3% of the total--but 7 of the 18 high Creative mothers mention 10 magazines in this category--i.e., about 7% of their total. Perhaps the most noteworthy difference is in the number of children's magazines (Boys Life, Junior Natural History Magazine, etc.) mentioned by the two groups. Ten of the 22 high IQ mothers mention 17 such magazines, 3 of the 18 high Creativity mothers mention 5 such magazines.

## Parental Satisfaction and Dissatisfaction with The Child and with His School

A crucial issue in the present context--i.e., family environment and giftedness--is the reaction of the parent to any unusual qualities in the child and the type of education the child is getting. Two interview questions are relevant here:

a. During your child's earliest years in school, did the teachers call to your attention or did you yourself notice anything unusual about him and school?

b. As far as the present school is concerned, what are the things you like best about the education your child is getting? Is there anything about your child's education at this school that you are not satisfied with?

The replies to both questions are quite consistent and informative. They will be discussed in turn.

a. Although the high IQ and the high Creativity parents report the same number of total observations and the same number of favorable and unfavorable qualities in their children as seen by teachers, the high IQ parents report both a greater number of total observations (59 against 31) and a greater number of unfavorable qualities as seen by themselves. When the latter data are dichotomized into "not more than one unfavorable quality" and "more than one unfavorable quality," the resulting relationship may be presented as in Table 20.

TABLE 20

Number of Unfavorable Qualities Observed in their Children by Mothers of the Two Groups

| Number of Unfavorable Qualities Observed | IQ (N = 23) | Creative (N = 19) | $\chi^2$ | P |
|---|---|---|---|---|
| Not more than one | 13 | 17 | 5.53 | .02 |
| More than one | 10 | 2 | | |

What is noteworthy in these data is the greater "vigilance" and "critical" or at least "less accepting" attitude of the high IQ mothers--they both observe more about their children and they observe a greater number of objectionable qualities. It is as if they were on the look-out for things to improve about their children. (In this connection, the greater number of children's magazines the high IQ parents take is perhaps relevant).

b. The same "vigilance" and critical attitude is seen in their attitudes toward the school their children are attending. Here again the high IQ parents report a greater number of total observations (138 against 95), and a significantly greater number of dissatisfactions, as shown in Table 21.

TABLE 21

Number of Unfavorable School Qualities Observed by Mothers of the Two Experimental Groups

| Number of Unfavorable School Qualities Observed | IQ (N = 23) | Creative (N = 19) | $\chi^2$ | P |
|---|---|---|---|---|
| Not more than one | 7 | 12 | 4.5 | .05 |
| More than one | 16 | 7 | | |

## Parental Satisfaction With Their Child-Rearing Practices

Despite the apparent greater misgiving and uncertainty of the high IQ mother toward her child and toward the school, she expresses few misgivings and uncertainties than does the high Creative mother regarding her own child-training practices. It is almost as if she were critical of others but not about herself. The relevant interview question was: As you look back on the ways you have tried to make your child responsible to you as far as bed-time, playing outside, leaving the house, homework and so forth were concerned, would you say you were too lenient, not lenient enough, or what? The results are presented in Table 22.

TABLE 22

Mothers' Satisfaction and Dissatisfaction

With Their Own Child-Training Practices

| Opinion of Own Child Training Practice | IQ (N = 23) | Creative (N = 19) | $X^2$ | P |
|---|---|---|---|---|
| Satisfied | 17 | 8 | 4.37 | .05 |
| Dissatisfied | 6 | 11 | | |

## Kinds of Friends Preferred for Their Children

There is one final set of data that rounds out the differences between the family environment of the high IQ and the high Creativity families, at least as represented by the mothers' attitudes. The interview question was: What qualities do you like to see in your child's friends?

Again, the high IQ mothers had somewhat more to say. But the striking finding was the difference in what they said. When the qualities mentioned are divided into two categories, the one relating to "external" characteristics (e.g., "good family," "good manners," "studious"), the other to "internal" characteristics (e.g., "sense of values," "interest in something," "openness--not secretive"), the resulting relationship may be summarized as in Table 23.

## TABLE 23

### Characteristics Preferred for Children's Friends by Mothers of the Two Groups

| Characteristics | IQ (N = 23) | | Creative (N = 19) | | t | P |
|---|---|---|---|---|---|---|
| | $\bar{x}$[1] | s | $\bar{x}$ | s | | |
| External - Specific e.g., good family, manners, studious | 2.48 | 1.20 | 1.58 | 1.07 | 2.56 | .02 |
| Internal - General e.g., sense of values, interests, openness | .91 | 1.12 | 1.79 | 1.47 | 2.13 | .05 |

[1] These means refer to the average number of characteristics mentioned.

Several sample responses may give some greater substance to these tabular differences. Here, for example, are two high IQ mothers describing the qualities they would like to see in their child's friends: (a) "Sunday school children, religious, go to Church every Sunday, of parents whose standards are ours. Honest, sincere, clean-minded and mouthed. Studious." (b) "Right between the eyes--aware of my own inadequacies. Intelligence is certainly foremost--admit to my snobism. Kind of cultural background--not money. A level of family. What I don't like--wild kid who doesn't know how to behave in a house--dirty talk--I've put up with it--a certain amount is acceptable--outside can use up energies. Neither extroverted nor introverted."

Here are two high Creativity mothers describing the qualities they would like to see in their child's friends: (a) "Like what I want to see in E. . . (her child)--it's the same thing. Valid sense of values--what a person is rather than what he appears to be. Satisfaction in creative constructive activity. Balance and maturity in interpersonal relations. Interest and enthusiasm for learning and reaching out beyond it to greater understanding." (b) "Openness--not secretive that old folks won't understand. Interest in something to do--not bored expression. Temperate in manners and habits. Frankness and honesty. Interest in living." It is here in the projections of desirable traits for their children's friends that we may perhaps see the most honest aspirations for their own children--as the high Creative mother says, "It's the same thing." And it is here, as we have seen, that we again find some very striking differences indeed.

## Discussion and Summary

It is clear that the intellectual functioning of adolescents can be differentiated not only into quantitative categories of high and low IQ but also into more qualitative categories among which are "high IQ without concomitant high Creativity" and "high Creativity without concomitant high IQ." When groups of adolescents representing these types of cognitive functioning to a high degree are selected, we find that both groups are equally superior to the population from which they were drawn in scholastic achievement, but that the two groups differ sharply in other cognitive and social-psychological functions such as value orientations, their effect upon teachers, their fantasy productions, their career aspirations, and that they come from very different family environments.

Giftedness and more specifically the concept of creativity has recently been the focus of considerable theorizing both in cognitive and motivational terms, and data of the type presented in this chapter are consistent with a number of theoretical positions. In the context of cognitive theory, for example, Guilford's factors of convergent and divergent thinking are highly relevant. Discussing the production of tests to assess these factors, he states:

> In tests of convergent thinking there is almost always one conclusion or answer that is regarded as unique, and thinking is channeled or controlled in the direction of that answer. . . In divergent thinking, on the other hand, there is much searching about or going off in various directions. . . Divergent thinking. . . is characterized. . . as being less goal-bound. There is freedom to go off in different directions. . . Rejecting the old solution and striking out in some new direction is necessary and the resourceful organism will probably succeed.[1]

It is of course apparent that in these terms our high IQ adolescents tend to favor "convergent" modes of thinking, and our high Creativity adolescents tend to favor "divergent" modes of thinking.

In the context of motivational theory, Maslow's formulations of "defense" and "growth," for example, are similarly relevant to the present issues. He writes:

> Every human being has both sets of forces within him. One set clings to safety and defensiveness out of fear, tending to regress, hanging on to the past. . . afraid to take chances, afraid to jeopardize what he already has, afraid of independence, freedom, separation. The other set of forces impels him forward toward wholeness of self and uniqueness of self, toward full functioning of all his capacities, toward confidence in the face of the external world at the same time that he can accept his deepest, real unconscious Self. . . This basic dilemma or conflict between the defensive forces and the growth trends I conceive to be existential, imbedded in the deepest nature of the human being, now and forever into the future. . .
>
> Therefore we can consider the process of healthy growth to be a never-ending series of free choice situations, confronting each individual at every point throughout his life, in which he must choose between the delights of safety and growth, dependence and independence. . . Safety has both anxieties and delights; growth has both anxieties and delights.[2]

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[1] J. P. Guilford, A Revised Structure of Intellect. Rep. Psychol. Lab., No. 19, Los Angeles, University of Southern California, April 1957, pp. 6, 7, 9.

[2] A. H. Maslow, "Defense and Growth," Merrill-Palmer Quarterly, 1956 3, No. 1, pp. 37-38.

Whether we assume the cognitive or the motivational stance, adopt for our use the one set of concepts or the other, or whether we attempt what seems to us the more fruitful procedure of seeing the two formulations as referring to similar processes in merely different terms, it seems to us that the essence of the performance of the high Creativity adolescents lay in their ability to produce new forms, to risk conjoining elements that are customarily thought of as independent and dissimilar, to "go off in new directions." The creative adolescent seemed to possess the need to free himself from the usual, to diverge from the customary behavior; he seemed to enjoy the risk and uncertainty of the unknown. In contrast, the high IQ adolescent seemed to possess to a high degree the ability and the need to focus on the usual and to be "channeled and controlled" in the direction of the "right" answers, the socially accepted solution. He appeared to shy away from the risk and uncertainty of the unknown and to seek the safety and security of the already known.

There is yet a third formulation, developed by Rogers, which although similar to Guilford's and Maslow's and as applicable to our cognitive and personal-social data as their formulations, is in its details particularly relevant to our imaginative productions and fantasy materials.

Rogers identifies three conditions which seem to him characteristically associated with a potentially constructive creative act. They are:

> 1. Openness to experience. This is the opposite of psychological defensiveness, when to protect the organization of the self certain experiences are prevented from coming into awareness except in distorted fashion. In a person who is open to experience each stimulus is freely relayed through the nervous system, without being distorted by any process of defensiveness. . . . This means that instead of perceiving in predetermined categories (trees are green; college education is good; modern art is silly) the individual is aware of the existential moment as it is, thus being alive to many experiences which

> fall outside the usual categories (this tree is lavender; this college education is damaging; this modern sculpture has a powerful effect on me). . .
>
> 2. An internal locus of evaluation. Perhaps the most fundamental condition of creativity is that the source or locus of evaluative judgment is internal. The value of his product is, for the creative person, established not by the praise or criticism of others, but by himself. Have I created something satisfying to me? Does it express a part of me--my feeling or my thought, my pain or my ecstasy? These are the only questions which really matter to the creative person, or to any person when he is being creative. . . .
>
> 3. The ability to toy with elements and concepts. Associated with the openness and lack of rigidity described under 1 is the ability to play spontaneously with ideas, colors, shapes, relationships--to juggle elements into impossible juxtapositions, to shape wild hypotheses, to make the given problematic, to express the ridiculous, to translate from one form to another, to transform into improbable equivalents. It is from this spontaneous toying and exploration that there arises the hunch, the creative seeing of life in a new and significant way. . .[1]

Each of these criteria, it seems to us, is applicable to the differences in the imaginative productions of the two groups. The high Creatives are more stimulus-free and less categorical. As we have already observed, cereal can "bend, sag and sway," as well as "snap, crackle, and pop," "tag" can mean "label" even in a school yard. And their imaginative productions contain elements of fantasy, such as incongruous associations, aggression, violence, which might not appear if their defensiveness were high. The high Creatives' more "internal locus of evaluation" is also clearly apparent. Many of their productions are quite esoteric. Unlike the high IQ's, they do not bother with the conventional signs assuring immediate communication, and they seem relatively unconcerned whether their "message" will be understood by everyone. It is almost as if their own enjoyment or evaluation of their response to a stimulus is sufficient, and while the high IQ's are intent on communicating to others, the high Creatives seem bent on expressing themselves. In this connection, it is noteworthy that the same "internal locus of evaluation" is characteristic of the attitudes and career choices of the high Creatives--their values are quite different from those they believe necessary for standard adult success or those they believe their teachers favor, and they do not seem to care that they do differ.

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[1] C. Rogers, "Toward a Theory of Creativity," Creativity and Its Cultivation, H. H. Anderson, Editor. New York: Harper and Bros., 1959, pp. 69-82.

Finally, there is probably no quality that more sharply differentiates our high Creativity and our high IQ adolescents than the former's "ability to toy with elements and concepts," "to make the given problematic," "to express the ridiculous." It is in this "playfulness" with "givens," with "conventions," and with "pre-determined categories"--in the ability to think of a brick as at once part of a house and as a paper-weight, of Freddie Jones as at once attaining success but not amounting to much, of face-cream that is at once slippery and skid-proof, and of tag that is at once a game and a label--that the freshness, vitality, and uniqueness, if not for some of us peculiarity, of the high Creatives' response to the world is most clearly manifest.

Turning now to a consideration of possible sources for those differences between our high IQ's and our high Creatives in basic cognitive and personal-social responses to the world, we would maintain, without in any way denying the possibility of genetic factors, that the differences between the groups have their source not only in immediate school experiences but in the family environment in which they grew up. Schachtel's formulation of the pressures upon the developing child to accept the "givens," the "codes," the "pre-determined categories" of his culture seem to us very relevant here. He writes:

> In everybody's life one can observe the effect of the pressure of society, as represented by parents, teachers, peers, toward the formation of a more or less definite, closed view of life and the world, a certain code of behavior as well as often very definite views about things and people and what they are there for. These views may be explicit or implicit. The parents answer the child's endless questions and their answers usually transmit the labels of the culture, the names of things, whether they are useful or useless, good or bad, etc. Inasmuch as the child looks upon the parent as all-knowing, or with fear, he accepts these views and with them very often the implicit assumption that these answers contain all there is to the subject. Obviously, there are great variations in parents with regard to the wish, or the absence of it, to impose their views as the only ones on the child or to further the child's own exploratory curiosity; with regard to their own awareness of and readiness to admit, the limited nature of their knowledge or, on the contrary, their wish to appear as omniscient or as the ones who always know best. The same holds true for teachers. Parents and teachers, in transmitting the current sociocultural views of the world to the child, can help both to open and to close the world for the child. Even if they mostly want to open it, they cannot help but close it in some ways, because there is no man who is not to a considerable extent embedded in the culture in which he grew up, the language of his culture, etc.
>
> In addition to the closure of the world which results from the transmission of a familial and/or cultural viewpoint, parental curbing of the child's exploratory drive can also be a factor that interferes with the world-openness of the child and often leads to a more or less powerful strengthening of the tendency to avoid the unknown and remain embedded in the familiar. The more worried the parents are about the dangers of the world, the more likely are they to impart this view to the child (italics ours).[1]

The family environment of our subjects, at least as portrayed in the mothers' interviews, is consonant with these formulations. It is the parents of the high IQ's rather than the parents of the high Creatives who seem to be, in Schachtel's phrase, "more worried about the dangers of the world." It is they who more frequently recall financial insecurity during their own childhood, and presumably this may still be at least a latent concern now. And it is the high IQ parents who are more "vigilant" about their children's behavior and academic performance. They tend at once to be more critical of their children and of the education the school is providing. Nor is their vigilance limited only to concerns about their children's educational progress. They are vigilant too about their children's friends. The qualities they would like to see in these friends, which may in a sense be conceived of as projections of the qualities they are most concerned with in their own children, focus on such conventional and immediately visible virtues as "cleanliness," "good manners," and "studiousness." In contrast, the parents of the high Creativity adolescents focus upon such less conventional qualities as the child's "openness to experience," his "values," and his "interests and enthusiasm for life."

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[1] E. G. Schachtel, Metamorphosis, New York, Basic Books, Inc., 1960, p. 187.

When these differences in the parents' attitudes and concerns are combined with the differences in educational specialization, the age discrepancy between father and mother, and the kind of reading material available in the home, the over-all impression of the high IQ family is one in which individual divergence is limited and risks minimized, the over-all impression of the high Creativity family is one in which individual divergence is permitted and risks are accepted. In this sense, not only Schachtel's formulation but Maslow's concepts of "defense" and "growth," which were used to distinguish the high IQ adolescent and the high Creativity adolescent, seem useful also in distinguishing the family environments of the two groups.

At least three qualifying remarks seem in order with respect to the parent data and the children themselves. First, in discussing the greater "vigilance" of the parents of the high IQ adolescents, we do not intend to give support to the current unfortunate dichotomy between "bad" authoritarianism and "good" permissiveness. The issue is not all-or-none, either-or, but appropriate emphasis. Second, in adducing evidence for the greater "specialized education" and "bookishness" of the parents of the high IQ children as against the parents of the high Creativity children, we do not intend to suggest that the presence of books or specialized knowledge in the family leads inevitably to high IQ, the absence to high Creativity. It is not the presence or absence of books or specialized knowledge but their use and meaning in the home that may make the difference. Third, in putting the high IQ's and the high Creatives in the family context, we are afraid the formulation may have tended unqualifiedly to favor "divergent thinking" and "constructive cognition" over "convergent thinking" and "conservative cognition." As we have already said--and we want to make clear again--both high intelligence and high creativity are valuable, and we do not wish to give the impression of one group as somehow representing "good guys" and the other "bad guys." The distinction we are making between modes of cognitive giftedness is analytic and not necessarily evaluative. Both the "conservative" and the "constructive" aspects of cognition and social behavior are socially valuable.

# CHAPTER IV

# THE HIGHLY MORAL AND THE HIGHLY ADJUSTED ADOLESCENT: EXPLORATIONS IN PSYCHO-SOCIAL GIFTEDNESS

## The Problem

When used to describe children of exceptional ability, the term "gifted" causes little controversy. Few question its appropriateness as applied to the child with high intelligence or high creativity. However, if someone suggests that the child with outstanding qualities other than the conventional abilities be called "gifted," controversy begins. Is the child who is more virtuous than his peers a gifted person? Should the term be applied to the child who adjusts exceptionally well to his social environment?

Without taking sides in an argument that is essentially semantic, we can agree that qualities such as "morality" and "psychological adjustment" are highly valued by our society. It is equally clear that as parents and teachers we try diligently to foster the development of these qualities in our children. Certainly exploratory efforts to understand children who are outstanding in these areas would be a natural adjunct to any comprehensive study of giftedness. Accordingly, as part of the Gifted Adolescent Project we included in our test batteries instruments designed to identify children who appeared to be "gifted" in these psycho-social qualities. The purpose of this chapter is to report on these exploratory efforts.

## Subjects, Instruments, and Procedures

As was true in the case of the highly intelligent and the highly creative adolescents, the experimental groups described here were identified from among approximately 450 adolescents enrolled in a Midwestern private school. The groups and the procedures used to identify them were as follows:

Group 1 - "Highly moral adolescents" - (N = 19 boys; 11 girls)[1] these subjects were in the top 20 per cent on three tests of morality compared to students of the same age and sex, but were below the top 20 per cent on all the instruments used to define the Highly Adjusted group.[2] The morality tests were:

1. Do You Agree? This instrument consists of 25 problem situations, each followed by four alternate courses of action. For each situation the subject is to choose the course of action that, in his opinion, would be best for the person faced with the choice. Fifteen of the 25 situations involve "moral" issues, the others are "filler" items designed to disguise the purpose of the instrument. The four alternatives to each situation are composed of two that reflect a "moral" decision and two that do not. Of the two "moral" alternatives one is justified by a wish to avoid unpleasantness (e.g., "Confess in hopes that the punishment will be lighter."), the other portrays moral action as a good in itself (e.g., "Confess because that's the only proper thing to do."). The second type of

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[1] In some of the tabular material to be presented below the total N will be slightly less than the N reported here. Absences and school dropouts account for these differences.

[2] It will be recalled that there was to be no overlap among our six experimental groups. Subjects who were high (top 20 per cent) in more than one of the six areas were removed from the sample. Thus, the subjects described here were also below the top 20 per cent on the instruments used to define the experimental groups in the areas of intelligence, creativity, breadth of interests, and buoyancy.

alternative is considered "more moral" than the first. In order to make the moral alternatives less attractive, the subjects were told that the instrument had been administered to "500 typical high school students" and the frequency of their choice was given beside each alternative. The largest of these ficticious frequencies rarely appeared beside the "correct" response. The subject's score was the number of times he chose the most moral alternative.[1]

2. Personal Opinion Questionnaire. This instrument consists of 45 statements with which the subject is asked to agree or disagree. All of the statements concern ethical or moral questions and are designed to assess qualities such as the respondent's allegiance to principles and causes, his compassion for wrong-doers, his willingness to stand against public sentiment where morals are involved, and the like. A subject's total score is the number of times he answers "correctly."

3. Descriptive Words. This instrument consists of 20 sets of three adjectives describing personal qualities. In each set one adjective describes a "moral" quality (e.g., honest, loyal, truthful), one a physical quality (e.g., strong, handsome, skillful), and one a social quality (e.g., popular, likeable, cooperative). The subject is required to rank the adjectives in each set according to which he would like others to apply the adjectives in describing him. Separate forms are used for boys and girls. For each set of three adjectives a score of 2, 1, or 0 points is given, depending on whether the "moral" adjective is ranked first, second, or third. The scores are summed over the 20 sets of adjectives to provide a total score.

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[1] For a more complete description of this test and those that follow, see Chapter 2.

Group 2 - Highly Adjusted adolescents - (N = 18 boys; 17 girls)[1] These subjects were in the top 20 per cent on four tests of psychological health or adjustment compared to students of the same age and sex, but were below the top 20 per cent on all the instruments used to define the Moral group.[2] The psychological health tests were:

1. California Test of Personality. This is a commercially-available test that presents the subject with 180 questions of the type: Do you often have headaches? Do you find that your mother and father are difficult to please? Subjects are required to answer "yes" or "no" to each question. The test is divided into two parts, one assessing "personal adjustment," the other, " social adjustment." Scoring procedures followed the recommendations in the test manual.

2. Direct Sentence Completion. (The GJG Test of Behavior) The subject is asked to complete 60 sentences of the type: "When I saw I was going to fail I _______;" or, "I think my father is _______." Twenty-seven of these sentences are given a plus or minus score depending on the presence or absence of morbid fantasy, defeatism, overt aggression, and the like. The total score is the summation of the individual sentence scores.

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[1] In some of the tabular material to be presented below, the total N will be slightly less than the N reported here. Absences and school dropouts account for these differences.

[2] It will be recalled that there was to be no overlap among our six experimental groups. Subjects who were high (top 20 per cent) in more than one of the six areas were removed from the sample. Thus, the subjects described here were also below the top 20 per cent on the instruments used to define the experimental groups in the areas of intelligence, creativity, breadth of interests, and buoyancy.

3. Indirect Sentence Completion. (The GJG Verbal Thinking Speed Test). This instrument is identical to the Direct Sentence Completion except that proper names are inserted for the pronoun "I," thus changing it from a "self-report" to a "projective" instrument. Boys' names are used in the male form of the instrument and girl's names in the female form. The instrument is presented as a "thinking speed" test. To reinforce this notion, subjects are asked to raise their hands when they were finished and the elapsed time is written on their test booklets. This instrument was administered approximately two weeks prior to the administration of the Direct Sentence Completion.

4. Do You Sometimes? This instrument is an expanded version of a test appearing in Cattell's Objective-Analytic Test Battery (Cattell, 1956), and consists of 30 statements of the type: "I sometimes say unpleasant things about a person that I would not tell him to his face," or "I have sometimes felt like swearing at my mother and father." A subject's score is the total number of times that he admits to such behavior. Since this score correlates positively with measures of anxiety and negatively with the other psychological health indicators, a subject's standard score on this instrument is added negatively to his scores on the three instruments described above.

The comparison of these two experimental groups of adolescents was organized around four major queries:

1. How do the students compare intellectually? That is, how do they compare with each other and with the total student body on IQ and standard achievement tests?

2. How are the students perceived by teachers? How do they compare

in the eyes of the teachers, on qualities such as "desirability as a student," "leadership potential," "eagerness to learn?"

3. How do the students themselves perceive their schooling? How satisfied are they with their present school experience? How do they describe their typical feelings in the classroom? What types of experiences do they find most worthwhile in school?

4. What home characteristics, if any, distinguish the groups? Are there differences in the way the parents of these two types of students view their child and his school experience? Are there differences in the physical and social characteristics of the home?

In order to answer these questions, data from the following sources were used:

1. Individual Intelligence tests. In most cases this was the Binet. A small number of children were given the Henmon-Nelson, the scores of which were converted by regression to equivalent Binet scores.

2. Standardized verbal achievement tests. A whole series of verbal achievement tests were administered to each class group. Scores on these tests were transformed to standard scores and an average was obtained for each student to represent his overall verbal achievement. The specific names of the tests are given in Chapter II.

3. Standardized numerical achievement tests. Because of differences in the curricula of the various grade groups it was not possible to administer the same test of numerical achievement to all subjects. The following tests were given according to grade placement.

Pre-freshmen - Iowa Everypupil Arithmetic Test, (Advanced Form)
Freshmen - Snader General Mathematics Test
Sophomores - Cooperative Elementary Algebra Test, Form T

Juniors - Cooperative Intermediate Algebra Test

Seniors - Cooperative Geometry Test, Form 2

4. Teacher ratings. Each student was given three ratings by his present teachers. These ratings included (a) his general desirability as a student; (b) his possession of leadership qualities; and (c) his ability to become involved in learning activities. Teachers were required to place all of their students on a five-point scale so that Categories 1 and 5 each contained one-twelfth of the students; Categories 2 and 4 each contained one-fourth of the students; and Category 3 contained one-third of the students. The values 5, 8, 10, 12, and 15 were assigned to the categories and were used in quantifying the ratings.

5. Student Opinion Poll. This is a 60-item opinionnaire designed to elicit responses concerning general satisfaction or dissatisfaction with various aspects of school--viz., the teachers, the curriculum, and student body, and classroom procedures. The instrument is scored by giving one point each time the subject chooses the least critical response to a multiple-choice item.

6. Adjective Check List. From a list of 24 adjectives, each student was asked to choose the six which best described his characteristic feelings while attending classes in particular school subjects. The list contained 12 "positive" (e.g., confident, happy, eager, relaxed) and 12 "negative" adjectives (e.g., bored, restless, misunderstood, angry). This instrument was administered as part of the Student Opinion Poll.

7. Educational Essay. Each student was asked to write a brief essay, given the following directions: "During this academic year you have spent hundreds of hours in classes of various kinds, ranging from science and foreign languages to physical education and the arts; from shop and home economics to English, mathematics and social studies. Choose the one hour

that seems to have been most worthwhile to you. Describe this class in some detail and explain why you feel it to have been most worthwhile." Approximately thirty minutes was allowed for the writing.

8. Parent Interview. Two- to three-hour interviews were obtained from most of the mothers of the students in the two groups. The majority of the interview questions concerned the mother's perceptions of her child, his education, and his behavior in the home.

## The Findings

The first question to be examined concerns the relative intellectual levels and academic functioning of the two groups and can be answered quite directly by comparing intelligence test and achievement test data from the students. A summary of the relevant data appears in Table 1.

TABLE 1

Intelligence Test and Achievement Test Scores
For the Two Experimental Groups

| | Moral Group[1] | | | Adjusted Group | | | |
|---|---|---|---|---|---|---|---|
| | $\bar{X}$ | $s$ | $n$[2] | $\bar{X}$ | $s$ | $n$[2] | $t$ |
| IQ | 127.25 | 9.13 | 28 | 124.88 | 9.70 | 33 | 1.06 |
| Numerical achievement | 52.70 | 8.88 | 27 | 47.67 | 7.63 | 32 | 2.77** |
| Verbal achievement | 50.54 | 7.08 | 30 | 46.12 | 7.04 | 35 | 2.15* |

[1] Beginning here and throughout the remainder of the chapter the term "Highly" will frequently be omitted when mentioning the experimental groups.

[2] Certain of the test scores were not available for a small number of students, hence the slight variations in the sample sizes.

**Significant at the .01 level.

*Significant at the .02 level.

The results are quite clear-cut. Despite the fact that the two groups do not differ significantly in intelligence test scores, the Moral subjects have a decided edge over the Adjusted subjects in both numerical and verbal achievement. These differences take on special significance in light of the widely-held assumption that adequacy of psychological functioning contributes directly to the achievement behavior of children.[1] Why the differences occur, can of course only be conjectured. Perhaps the Moral students take school more seriously and are more diligent about applying themselves to their lessons. Perhaps, (and this is not inconsistent with the first hypothesis), the differences reflect a greater parental pressure in the homes of the Moral students. We shall return to a consideration of this possibility when the family environments of the two groups are discussed.

The second question--whether there are differences in the way the Moral students and the Adjusted students are perceived by teachers--makes use of the Teacher Ratings and may be answered by separating the adolescents into two groups: those who receive above-average ratings (when compared with the total student body) and those who do not. These data are summarized in Table 2.

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[1] This assumption has been questioned in a number of resent researches, including two that are part of the general study reported here. See P. W. Jackson, J. W. Getzels, and G. A. Xydis, "Psychological Health and Cognitive Functioning in Adolescense: A Multivariable Analysis," Child Development, 1960, 31, 285-298; also, P.W. Jackson and J. W. Getzels, "Psychological Health and Classroom Functioning: A Study of Dissatisfaction with School Among Adolescents," Journal of Educational Psychology, 1959, 50, 295-300.

TABLE 2

**Number of Students Receiving Above-average Ratings by Teachers**

| Quality Being Rated | Moral Students (N = 28) | Well-adjusted Students (N = 33) | $X^2$ | P |
|---|---|---|---|---|
| Desirability as a student | 14 | 13 | .69 | ns |
| Leadership qualities | 8 | 19 | 5.17 | .025 |
| Involvement in learning | 13 | 15 | .01 | ns |

Again the results are rather straightforward. The two groups are equal on ratings of "Desirability as a student" and "Involvement in learning" but the Adjusted group is perceived as containing more individuals who are above average in "Leadership qualities." It should be noted that the criteria used in choosing the Adjusted group included the relative absence of negative affect and the presence of positive feelings toward others. It is not too surprising, therefore, that these students are perceived as possessing more leadership qualities by teachers than are the Moral students. Interestingly, however, this superior leadership ability (at least as judged by teachers) does not appear to make the Adjusted students more desirable as students than the Moral students. In fact, the latter appear to be favored somewhat over the former in this category.

The third question--how the students perceive their school experience--can be answered somewhat more fully than were the first two because of a greater abundance of relevant data. The most direct answer to the question comes, of course, from responses to the Student Opinion Poll. These data are shown in Table 3.

## TABLE 3

### Means and Standard Deviations of Scores on the Student Opinion Poll

| Satisfaction with-- | Moral Students (N = 27) $\bar{X}$ | s | Well-adjusted Students (N = 31) $\bar{X}$ | s | t |
|---|---|---|---|---|---|
| Curriculum | 9.00 | 2.73 | 10.09 | 2.10 | 1.93 |
| Pupils | 8.44 | 3.02 | 10.03 | 2.42 | 2.19* |
| Teachers | 9.66 | 2.95 | 11.77 | 2.49 | 2.92** |
| Classroom Procedures | 8.70 | 3.52 | 9.90 | 1.92 | 1.50 |
| Total | 34.81 | 9.83 | 41.70 | 7.28 | 2.56* |

Note: The higher the score, the greater the satisfaction.

** Significant at the .01 level.

* Significant at the .05 level.

Here we see that despite their generally lower academic performance the Adjusted Students appear to be more satisfied with their total school experience than do the Moral Students. More important than the difference in total scores, however, are the differences on sub-scores of the instrument. Items dealing with the curriculum and classroom procedures do not seem to distinguish between our two experimental groups. Rather, it is on items dealing with pupils and teachers that the greatest differences appear. The Adjusted students are decidedly more satisfied with the other people in their school environment than are the Moral students.

As an illustration of these differences, responses to the following item may be cited:

35. In my opinion, student interest in social organizations, such as clubs, fraternities, and sororities is

a) too great.
b) about right.
c) not great enough.

Twenty-three of the 31 Adjusted students chose the "b" response to this item; only 10 of the 27 Moral students chose that alternative. Within the latter group the preponderance of "dissatisfied" students chose alternative "a."

Or again, in response to the item:

45. When it comes to grading students, teachers in this school are generally

a) too "tough."
b) just "tough" enough.
c) not "tough" enough.

Of the 31 Adjusted students, 24 chose alternative "b"; only 10 of the 27 Moral students chose that alternative. Moreover, there was an equal split among the "dissatisfied" Moral students between those who perceived the teachers as being "too tough" and those who perceived them as being "not tough enough." In contrast, 6 of the 7 "dissatisfied" Adjusted students saw the teacher as being "too tough."

Even on those items which show equal dissatisfaction for the two groups there is frequently a difference in the form the dissatisfaction takes. For example, in response to the item:

49. In my opinion, the emphasis which students in this school place upon grooming and appearance is

a) too great.
b) about right.
c) not great enough.

Ten students in each of the experimental groups did not choose the "about right" response. For the Moral students, however, 9 of the 10 "dissatisfied" students thought that the emphasis given grooming and appearance was too great.

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In contrast, 7 of the 10 "dissatisfied" Adjusted students thought the emphasis was not great enough.

The Adjusted students' greater satisfaction with school is also evident (although not as dramatically) in the adjectives they use to describe their typical classroom feelings. Table 4 summarizes the data with respect to negative adjectives. Although the difference is often small, the proportion using a particular negative adjective is almost always larger in the Moral group. Two of the adjectives that are used more frequently by the Adjusted students--"dull" and "bored"--become particularly relevant in the analysis of the students' essays to be discussed below.

TABLE 4

Number of Subjects Choosing Negative Adjectives When Asked to Describe Their Typical Classroom Feelings

| Adjective | Moral Students (N = 27) | | Well-adjusted Students (N = 31) | |
|---|---|---|---|---|
| | f | % | f | % |
| Inadequate | 20 | 74 | 16 | 52 |
| Ignorant | 15 | 56 | 11 | 35 |
| Dull | 18 | 67 | 24 | 77 |
| Bored | 16 | 59 | 23 | 74 |
| Restless | 20 | 74 | 23 | 74 |
| Uncertain | 23 | 85 | 20 | 65 |
| Angry | 11 | 41 | 10 | 32 |
| Unnoticed | 13 | 48 | 13 | 42 |
| Unhelped | 15 | 56 | 17 | 55 |
| Misunderstood | 11 | 41 | 9 | 29 |
| Rejected | 4 | 15 | 8 | 26 |
| Restrained | 9 | 33 | 6 | 19 |

The data in Table 4 represent the general use of negative adjectives without regard to their relative ranking. Each student was allowed to choose six adjectives (from among twenty-four) to describe his feelings in each of seven classes. The student was counted as using a particular adjective if it appeared among any of his choices. However, the students were also required to rank the six adjectives for each class, thus, a somewhat more refined method of analysis might be to look only at those adjectives that were ranked first--i.e., those that were *most* descriptive of the child's feeling in the class. In the main, this analysis yields a result similar to that appearing in Table 4 and, hence, will not be reported in detail. There is one striking difference, however, involving the adjective "uncertain." Within the Moral group 11 of the 27 students use "uncertain" as their *first choice* in describing their typical classroom feelings; the same is true for only 4 of the 31 Adjusted students ($X^2 = 7.60$; $p < .01$). It is interesting that despite his superior academic achievement, it is the Moral student, rather than the Adjusted student, who feels most "uncertain" in the classroom.

To summarize the data presented thus far, the Moral students, despite their superiority on achievement tests, appear to be enjoying school somewhat less than are the Adjusted students. More particularly, they (the Morals) seem to be having some difficulty with what might be called the social (as opposed to the intellectual) life of the school. Peers and teachers serve as the objects of their dissatisfactions more often than do assignments and grades.

These differences are supported by the students' essays on their "most worthwhile class hour." The Moral students appear more likely to call a class hour worthwhile when they have mastered something or learned something "useful," when there has been an intellectual reward. In contrast, the

Adjusted students choose as worthwhile a class hour in which there was much group involvement or in which the general emotional tone was intense. Although it is difficult to support this generalization with quantifiable data, it is possible, through extensive quotations, to illustrate these differences. Consider, for example, the following essays from the Moral students:[1]

> First of all, I feel it is a near impossibility to point out one class period which meant more than any other, because one without all the others is nothing. However, if forced to make a decision I would say the most productive class period for me came in Latin class on examination day. I carry many classes this year and have spent little time learning the intricate side of any one subject. For this day, however, I had carried on extensive preparation and when I knew most of the answers it had the effect of stimulating an "intellectual revival" within me. I now appreciated the subject and have done better work in all subjects since.

> I think that my Social Science class is the most worthwhile. I gain more applicable knowledge from it than from any other course. Both from group reports and discussions and assigned material. My heartfelt gratitude!

> I think the most beneficial class I have had this year is in Shop. I like Shop. I am admired for my painstaking work and I come out with very worthwhile products. I am working in lapidary and have been for two years. I like it very much. I don't think I will go into any other field as an adult except music, art, and English.

> In Biology we dissected a cat. Although this took more than one hour, the last hour was very benefactory (sic!). We used instruments to cut open the different parts of the cat and explore them. It was worthwhile because it dealt with anatomy and with practical application and it certainly helped to see everything in reality rather than just from a book. It also stimulated my interest more and a person could see the relationship between things better. Also we studied other things somewhat along with it and helped application.

> A Math class a few months ago when I learned how to graph an equation and many related facts.

> I really do not know, but I will choose Math. The reason this seems worthwhile is because it seems to show more opportunities to use later on than any other subject. That is, at least for my purposes . . .

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[1] Unless deletions are specifically indicated, the entire essay is quoted verbatim. Corrections in spelling and punctuation have been made.

A class to be worthwhile should have certain aspects. It should accomplish something useful, it should increase your knowledge about the subject, it should be orderly and well run. The student, I think, should have the feeling of having learned something that will be helpful in future life. The classes in this school I feel most worthwhile are English and Social Studies. The teachers in both are well versed in their subjects and know how to teach. The subject matter is well-coordinated and the students participate extensively in both.

I feel the most worthwhile class hour this year was in General Science. We worked on genetics. It was fun. We learned quickly and the class moved as a whole. We learned more because the teacher moved faster. We learned why and how genes affect one another. How to figure the number of types in a line.

English has been the most worthwhile class of study for me this year. This course has covered mythology, patterns in English poetry, short story reading, spelling, descriptive writing, plus going over grammar and such. The main reason why is because this was the subject I improved most in.

One hour I thought quite worthwhile was in Social Studies. The teacher told us all about the situation in Cuba. I thought this was worthwhile because I learned a lot about current affairs. I think current news is very important and that we should spend more time on it. It was sort of a lecture and taught me a lot.

It is really an impossible task to look back over the year and pick just one class hour that has most benefited me. However, I can narrow it down to the subject of English. I pick English because my teacher has been able to stimulate my interest in the field, and keep me anxiously awaiting the next English class. It demonstrates that the teacher is the one that can make or break a class. One of the reasons why this teacher is so excellent (outside of her knowledge and academic teaching ability) is the fact that she keeps her class well-disciplined while still keeping a friendly atmosphere within the class. Since your survey is to find out what is wrong with American education, I don't feel myself "off the subject" to say that I feel the greatest single flaw in American education is the lack of teachers, like my English teacher, with sufficient disciplinary powers over their pupils.

Compare the above essays with the following ones written by the

Adjusted subjects:

The most worthwile class session I had this year was a session of Social Studies where we discussed Democracy. It gave the class a chance to really participate and put in its views. It gave me many new ideas on the subject and it cleared up some of the problems in my mind concerning this. Although it was not conducted in a very orderly fashion, it was a great discussion. It is very rarely when most of the kids participate in class. I guess it was because everybody was interested. I feel it gave us a chance to discuss many things that were in our minds and also the problems about this subject.

My most worthwhile class this year seems to have been History. For once in my lifetime it was really interesting! We had discussions in class about what it is that really makes people tick. We learned about the past, and then tried to relate the events and the people of today to the past. For instance, the teacher asked my class one day, "Why do Americans buy pink toilet paper?" The class' first reaction was one of giggles and then laughter. After we quieted down, he really asked us to be serious about our answers. It was one of the most interesting discussions we've ever had. It's probably one that I shall remember for my lifetime.

English has been the class which I have enjoyed the most. I have not only benefited greatly but also have found that it is the class I look forward to every day. There are very few lectures and the class as a whole is very relaxed. Most of the class time is spent in discussion and these discussions are usually quite lively and stimulating. . . . I have probably learned a great deal from the class also because the teacher makes the students feel at ease and free to make any contribution in the class they wish.

I like Art the best because I learned to sketch and cartoon and a lot of other things. Art has a variety of things to do and it is really fun. We went outdoors and drew and we also discussed other's work. For an hour I learned a lot.

Last year (Soph.) we had a number of lectures and discussion groups on current events in Social Studies. I had never experienced this type of discussion and I enjoyed it very much. Although I cannot pick out any one day, I remember that we had a discussion every Friday. A member of the class was asked to relate news happenings of the week and the others added to it. We then discussed our views and opinions on the news and had quite a number of good debates, sometimes between two students whose opinions differed. It was quite interesting.

I don't think there has been one class period that has been most worthwhile for me. The class that is most stimulating is English. But all of them are rather slow-moving and dull.

The hour we gave our radio play on Sputnik I was particularly good. It was an English project. We each had to write a portion of the script. I wrote 14 pages. We each gave a portion of it. There were four of us in our group and we did the whole thing by ourselves, practically no help from the teacher. After it was over we went in and talked to our audience, the 6th grade, to find out how much we had gotten over. This hour showed to us and (we thought) the teachers that we could work independently. . .

The class that I felt to be most worthwhile was Social Studies in my freshman year. One of my favorite activities is debating, when I know or am fairly sure of what I'm talking about. In Social Science we were studying United States History. Mr. _____, however, had promised to use a class period on segregation one day. This was

> during the time when there had been riots and great disagreements about segregation. Our class decided to make a tape recording and send it to a Southern school, giving them our views on segregation and asking them to send us one of their Social Science class' views on the back. The day we made the recording was one of the most interesting and worthwhile classes I have ever had. We had a very heated discussion, our class members disagreeing on a few points. This particular discussion, I think I got more out of than any other I have had. For though most of the things I said then, I still believe, some I had straightened out and added to that day.

> I think the most worthwhile period I spent this year was one during our Social Science unit of Great Religions. At the beginning of the class one boy brought up a question, a very thought-provoking question, of why people believed in religion at all. The rest of the period itself wasn't so good (our discussions usually aren't) but the question certainly made me (and I know everyone else) at least stop for a moment and think about it. Not that religion is that important (to me at least) but only for the fact that we questioned something that we had taken for granted and couldn't come out with an answer that would satisfy all of us, do I really think this period was well spent.

Even when the students from the two groups discuss a common class experience they seem to see it differently. Take, for example, the following two essays that concern a substitute teacher. The Moral student writes:

> The most worthwhile hour I have had this year was the first hour that Mr.______ took over the Physical Science Class. Mr.______, the regular teacher, is very nice and considerably smart, but Mr.______, being just out of college is a veritable genius by comparison. During this hour many things were explained about chemistry that I had been puzzling over all year. It brought out my full interest in the subject when I knew I could find out what I wanted to.

The Adjusted student writes:

> The hour that is the most worthwhile was in Science. Our science teacher was absent so we had a substitute. He was very nice. He showed us experiments that told us a lot about the moon. He spoke in a way that was interesting and asked us questions that were of interest. I learned a great deal that day and it was very interesting. He just didn't do all the talking and give us a lecture which usually happens in science. We talked and learned a lot.

Clearly, there are many ways of conceptualizing these differences. One approach, which has already been suggested above, would focus on the distinction between "intellectual" and "affective" experiences. From this point of view the Moral students appear to prefer intellectual to emotional excitement. They call "worthwhile" those classes in which they have experienced cognitive growth rather than those that were merely "interesting" or "stimulating." In contrast, the Adjusted students appear to enjoy the heat of discussion, the intimacy of shared feelings, the excitement of the timely topic. In this context it is certainly relevant to recall that two of the negative adjectives chosen more frequently by the Adjusted students, as against the Moral students, were: "dull" and "bored."

Another way of viewing the differences between the two groups would be to focus on the distinction between "personal" and "social" aspects of learning. The Moral students, in contrast to the Adjusted students, appear to perceive learning as more of a private affair, or at least as something that requires only one other person--the teacher. Indeed, if we can believe some of the answers that the Morals give to the Student Opinion Poll, it might appear that "others" frequently interfere with their learning, rather than facilitate it. This does not seem to be true at all in the case of the Adjusted students. For them learning appears to be more of a shared enterprise than a solitary one. Rather than viewing others as hinderances, the Adjusted student is likely to be as interested in the opinions and thoughts of others as he is in the substantive material being taught. Within this context the higher leadership ratings given the Adjusted students by their teachers take on added significance. If the Adjusted student's interest in his classmates is perceived by them (as it likely is) and by his teacher, it is not surprising that the latter judge him as being high in leadership.

The personal meaning of education to the Morals might be directly related to some of the criteria used in identifying this group. One of these criteria was the ability to move against popular opinion when a moral issue was involved--to stand alone. Again, it is not too surprising to find that adolescents who have this ability also seem to be less involved with their peers in the school environment.

A third way of characterizing the differences described thus far might be to use the terms "seriousness" and "fun." For the Moral students, education (and perhaps life itself) seems to be a relatively serious matter. The school experiences looked back upon as most worthwhile were often those that provided new and useful skills, or those in which rewards were offered for diligence and painstaking effort. A class was perceived as "good" if it prepared the student to handle more difficult material or to reach some future goal. In contrast, the Adjusted students seemed more likely to perceive education (and, again, perhaps life itself) as fun--something to be enjoyed. School experiences that they believed to be most worthwhile were often those that were momentarily exciting or unusual. For many of these students a class was perceived as "good" if it broke with routine or treated a topic of immediate interest.

Each of these three ways of summarizing the differences between the two groups has obvious weaknesses. Each distorts reality to some extent. To be sure, there were some Moral subjects who seemed to prefer "affective," as against "intellectual," classroom experiences; some who preferred the "social" as opposed to the "personal rewards of learning; some who were more "fun-oriented" than "serious-minded." The same type of variability could be found within the Adjusted group. Nonetheless, the distinctions do hold in a general way and, thus, provide a very tentative conceptual framework for discussing these two types of "psycho-socially gifted" children.

Having described the children themselves, we are prepared to ask the third research question: What home characteristics, if any, distinguish the groups? The relevant data for answering this question were obtained from individual interviews with the mothers of the subjects. All mothers were asked the same questions and the researcher conducting the interview did not know into which particular experimental group the interviewee's child belonged. Only the interview questions revealing significant differences between the two groups are discussed in the analysis that follows.[1]

Clearcut differences appear in the way the mothers in the two groups perceive their children. One question, for example, required the mothers to report "good" and "bad" qualities of their children--qualities that were either noticed by the mothers themselves or called to their attention by teachers. The relevant data are summarized in Table 5.

TABLE 5

Number of Parents Mentioning Good and Bad Characteristics of Moral Subjects and Adjusted Subjects

| Type of Characteristic Mentioned | Moral Group (N = 27) | Adjusted Group (N = 28) | $X^2$ |
|---|---|---|---|
| Mentions only neutral or good characteristics | 6 | 15 | 4.49* |
| Mentions some bad characteristics | 21 | 13 | |

*Significant at the .05 level. Yates' correction applied.

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[1] The terms "Adjusted mothers" and "Moral mothers" will occasionally be used in place of the more awkward expressions "mothers of the Adjusted subjects" and "mothers of the Moral subjects."

The data in Table 5 reveal quite clearly the greater likelihood of "bad" qualities being mentioned by the mothers of the Moral subjects, as against those of the Adjusted subjects. It should be pointed out that these qualities might have been noticed at any time in the child's life, from his early school years to the present. Although it is not apparent from the data in Table 5, there were very real differences in the type of "bad" qualities mentioned by the mothers of the two groups. Take, for example, the following excerpts from the interviews of the Moral mothers:

> He was quite shy. He was too concerned with rules and always obeyed.
>
> He didn't seem to take part in first grade as much as teachers felt he should. He sort of followed that pattern all along. . . He was sick with polio--made him nervous with crowds of kids.
>
> She was retiring. Not reading as rapidly as she should. Was an emotional block. When she was alone in clinic her reading immediately improved.
>
> She was rather shy. I discussed it with each teacher. They always understood and were quite helpful and she grew out of it.
>
> He was rather lazy about doing his work. He kept to himself and didn't do physical activities with boys. He was cowed by boys hitting him. We were disappointed about those things. He couldn't relax and be like other kids.
>
> He had polio and had double vision for about a year. He became very fearful--almost a hypochondriac. Started to daydream or talked too much when he had a chance. Then he changed from being aggressive to immature. Had him tested to see if he was average or acceptable. . .
>
> I had to spank him to make him stand up to other boys and fight. Shyness has been a real problem.
>
> He had no masculine or boyish hobbies--toys bought for him--uninterested in things friends did.
>
> She was pretty quiet in the beginning.
>
> Always been shy and overly sensitive. Teacher recommended dramatic group. I never did anything as she was hesitant. She did take dancing lessons, but that's all.

> Very quiet--introverted--so quiet teacher didn't know who he was.
>
> Boys bullied him. A lonesome child being an only child. Many changes in school and promoted in class.

Compare now, the following responses to the same question from mothers of the Adjusted subjects:

> Aware of one difficulty at Pre-freshman year--felt acting smart alecky--I felt trying to gain attention as not in limelight.
>
> Grade 6 or 7 was rebellious--talked back to us. Acted belligerantly and created trouble with the other teachers.
>
> Not happy in kindergarten--worried about aggressiveness--had leadership but moved kids down. Always a big child. I never knew what it meant or discontent which was bothering him.
>
> Thought he was God's gift to the teaching profession. Teacher in 6th grade thought it was harder to teach class when he was not there.
>
> Little behavior problems--a little fresh at times, nothing serious. Talked to him--hold tongue, be more respectful of elders. Speaks piece when he feels he is right about problem in school.
>
> Tends to alibi for his inadequacies, they tell me. Argues to justify his not doing better. He was youngest and we did spoil him and he doesn't like unpleasantness, so tries to find excuse for himself--minor deceits--like hiding beans when housekeeper told him to eat them.
>
> Not competitive. Likes people as friends and not competitors. (N.B. Parent mentioned this as a "bad" quality!)
>
> Very shy--not participating--stayed outside the group--couldn't challenge her--didn't seem to be interested--thought an undue emphasis on social being rather than the individual.

The mothers of the Moral subjects seem concerned with their children's shyness or withdrawal from the group, whereas the "bad" qualities reported by the mothers of the Adjusted subjects (when they appear at all) seem to reflect opposite tendencies. Adjectives such as "fresh," "smart alecky," "rebellious" and "aggressive" appear with greater frequency in the reports of the latter group of mothers. These mothers, of course, are also less likely to mention "bad" qualities.

The same type of parental concern that is reflected in the Moral mother's more frequent perception of bad qualities in her child is also seen in her tendency to be unwavering in her child-rearing practices. The mothers were asked how consistent they were in the rules they established for bedtime, playing outside, leaving the house, homework, and so forth. The relevant data are summarized in Table 6.

TABLE 6

Mother's Perception of the Consistency of
Her Child-rearing Practices

| Degree of Consistency | Moral Group (N = 27) | Adjusted Group (N = 28) | $X^2$ |
|---|---|---|---|
| Average or above in consistency | 23 | 15 | 5.06* |
| Generally inconsistent | 4 | 13 | |

*Significant at the .05 level. Yates' correction applied.

As can been seen in Table 6, the mothers of the Moral subjects very seldom admit to inconsistency in their practices. Naturally, these data do not reveal the actual conditions in the home. It is possible, of course, that the two groups of mothers are equally inconsistent but that the mothers of the Moral subjects merely perceive themselves as being more consistent, or at least are less willing to admit to inconsistency. It is equally possible, however, that the mothers of the Moral subjectes are in fact more consistent in their practices and that this consistency reflects a greater concern over the behavior (or misbehavior) of their children.

The possibility that the mothers of the Moral child might be more concerned about the general behavior of their children is supported by data concerning the early education of these children. The data are summarized in Table 7.

TABLE 7

Number of Children Who Attended Nursery School and/or Kindergarten

| School Attended | Moral Group (N = 27) | Adjusted Group (N = 28) | $X^2$ |
|---|---|---|---|
| Nursery school and kindergarten | 25 | 18 | 4.93* |
| Kindergarten only | 2 | 10 | |

*Significant at the .05 level. Yate's correction applied.

The meaning of the data in Table 7 is obscured by the fact that children are sent to nursery school for a variety of reasons. The more frequent nursery school attendance among the Moral subjects need not imply a greater concern for the child's education on the part of his parents. It could mean, for example, that the mothers of the children in this group were more frequently working mothers and, therefore, found it necessary to place their children in school earlier than the entrance age for kindergarten. It could also mean, of course, that these mothers were interested in providing more social contacts for their children (because of shyness symptoms?).

The latter explanation is obviously consonant with the hypothesis that the Moral mothers show more concern (perhaps worry) over matters dealing with their children.

A rather unexpected finding which might help to clarify some of the parent data presented thus far deals with the type of dwelling unit in which the families now live. The data are shown in Table 8.

TABLE 8

Type of Dwelling Unit in Which the Students Live

| Type of Unit | Moral Group (N = 27) | Adjusted Group (N = 28) | $X^2$ |
|---|---|---|---|
| Apartment | 20 | 11 | 5.45* |
| House | 7 | 17 | |

*Significant at the .05 level. Yates' correction applied.

Again the data lend themselves to a variety of interpretations. We can't be sure, for example, that the same living arrangements existed during the early school years of the subjects. If they did, however, they might partially explain the more frequent nursery school attendance of the Moral subjects. It might be assumed that apartment living places greater restrictions upon the child's opportunities for social contact with other children and for planned play activities. Parents who live in an apartment might, therefore, be much more likely to compensate for these limitations by sending their child to nursery school.

These same data may be viewed in yet another way which is perhaps more in keeping with the total pattern of all the material presented thus far. This view would focus upon the meaning of home and the family in the life of the Adjusted child as against the Moral child. For the Adjusted group home and family seem to have an importance that is not shared by the Moral group. The fact that the Adjusted child is more likely to live in a single family house than an apartment merely symbolizes this difference. At the age of four or five the Moral subject has already begun to be physically separated from the home for a part of the day, the Adjusted subject has not. The childhood difficulties observed by the mothers of the Moral subjects are likely to deal with shyness and withdrawing tendencies--symptoms of excessive timidity in the social world; the difficulties observed by the mothers of the Adjusted subjects are likely to deal with rebelliousness and aggression--symptoms of excessive boldness in the social world.

Another example of the importance of the home and the family to the Adjusted subjects can be found in the mothers' responses to a question dealing with the child's interest in his father's occupation. The data are summarized in Table 9.

TABLE 9

Mother's Perception of Child's Interest

in his Father's Occupation

| Degree of Interest | Moral Group (N = 27) | Adjusted Group (N = 27) | $X^2$ |
|---|---|---|---|
| Uninterested or mildly interested | 22 | 12 | 6.32* |
| Intensely interested | 5 | 15 | |

[1] The father of one child in this group is deceased, hence the N of 27 rather than 28.

*Significant at the .05 level. Yates' correction applied.

If an intense interest in the father's occupation is interpreted as an indicator of closeness or intimacy with the family, it appears that this intimacy is present in the families of the Adjusted subjects and conspicuously absent in the families of the Moral subjects. Perhaps this phenomenon is linked to differences in the process of identification for the children in these two groups. In this connection it is well to recall that the Moral group--the one that is relatively uninterested in father's occupation--is also the group containing the highest proportion of boys.

Only the most salient findings from the interview data have been presented. However, there are other trends in the data that are worthy of comment, even though they do not reach a "respectable" level of statistical significance. They are mentioned here because of the way in which they complement the material already presented.

1. Mothers of the Moral subjects report a more frequent use of rewards in controlling their child's behavior than do mothers of the Adjusted subjects. The use of material and non-material rewards is reported by 20 of the 27 Moral mothers and by 14 of the 28 Adjusted mothers.

2. Mothers of the Moral subjects, as compared with mothers of the Adjusted subjects, report more often that their child is "missing something" that they themselves had as a child. This observation is made by 21 of the 27 Moral mothers and by only 15 of the 28 Adjusted mothers.

3. Children in the Adjusted group, as compared with those in the Moral group, were said to have received less discipline than their siblings. Ten Moral mothers and 14 Adjusted mothers reported that the discipline received by the children in question was different from that of their siblings. Five of the 10 Moral mothers reported that the discipline was greater for the child in question. Only 2 of the 14 Adjusted mothers made this report, the

remaining 12 said that the discipline was less for the child in question.

4. Mothers of the Adjusted subjects report a greater physical stability of their homes than do mothers of the Moral subjects. Twenty of the 27 Moral families had moved at least once in the past ten years; only 14 of the 28 Adjusted families had moved within that time period. This finding likely reflects the effect of apartment living as against home ownership.

## Discussion

Although admittedly exploratory, the findings of this study bear an interesting relation to the findings and theoretical formulations of other investigators. Havighurst and Taba (1949), for example, in their important study of adolescent character and personality describe five empirically identified personality types, two of which--The Self-Directive Person and the Adaptive Person--bear a strong resemblance to the groups we have been examining here.

If the issue of the leadership ratings of the Moral group by their teachers is for the moment disregarded, there is a distinct resemblance between Havighurst and Taba's Self-Directive Person and our highly Moral adolescents. In their description of this person Havighurst and Taba state:

> The Self-Directive Person enjoys a very good reputation, especially for responsibility and honesty. He is known as a conscientious person, who can be counted on to do what he says he will do. He is orderly and persistent in his work. He is known as a leader in school and in the organizations to which he belongs. He accepts leadership as a responsibility, though he does not always enjoy it. He is very self-critical, sets high standards for himself, sometimes doubts that he can achieve his goals, but drives ahead until he accomplishes what he has set out to do. He is strong-willed and may be somewhat stubborn. He is said to have a "strong" personality. He is usually a good student.
>
> The Self-Directed Person is self-sufficient and does not go out of his way to seek companionship. During the middle years of adolescence he is likely to be socially backward. He does not begin

> keeping company with the opposite sex as early as the average person, and probably his sexual impulses are more strongly inhibited than is the case in other personality types. He does not rely upon sexual attractiveness for acceptance and popularity.
>
> The Self-Directive Person is introspective, and he has a strong and rather severe conscience. This results in a good deal of anxiety, in the form of fear that he will do something wrong or that he had done something wrong. This anxiety is constructively handled in most cases. It leads this type of person to better performance and serves, so to speak, to keep him on his toes.
>
> Compared with the other groups, the Self-Directive Person places a strong emphasis upon self-achievement--achievement *per se* appears to be his goal in life. This person has *probably* had less than the usual amount of emotional warmth in his relations with his parents and with other adults. They have taught him that he can attain security only through performance. He learns not to expect to be appreciated for himself but for what he can accomplish. (Havighurst and Taba, 1949, pp. 131-32).

The resemblance between Havighurst and Taba's Self-Directive Person and the Moral subjects described in this report are too obvious to require complete enumeration. Suffice it to say that the Moral adolescent, as he has been described here, also "enjoys a good reputation, especially for responsibility and honesty";also is "self-sufficient" and "does not go out of his way to seek companionship:; also "places a strong emphasis upon self-achievement"; also "had probably less than the usual amount of emotional warmth in his relations with his parents and with other adults."

Of course there are differences as well as similarities. The Moral adolescent in the present study did not exhibit the leadership qualities mentioned in Havighurst and Taba's description of the Self-Directive Person. Nor is there evidence that, like the Self-Directive Person, he avoids contact with the opposite sex, or has strongly inhibited sexual impulses. Although it is evident that the Moral adolescent has (by definition) deep moral convictions and concerns, it is at least not immediately evident that his fantasies deal with moral conflict.

Nonetheless, in the comparison between our Moral group and Havighurst and Taba's Self-Directive Person, the similarities seem to us more compelling than the differences.

Just as the Moral subjects share some of the characteristics of the Self-Directive Person, so do the Adjusted subjects appear similar to Havighurst and Taba's Adaptive Person. Describing this type of adolescent, they state:

> The Adaptive Person is sociable, friendly, vivacious, and outgoing in manner. He has what is often called good "social intelligence." Usually he is good looking and has great physical vitality. Though he enjoys leadership, he does not strive hard for it. He fits readily into almost any social situation and seems to conform naturally to the expectations of the people with whom he is associated.
>
> Some persons--the Adaptive type--acquire a code for conduct by effortless absorption from the social environment. In so doing, a person may learn what is right and what is wrong without necessarily developing a clear-cut rationale of character values, without being deeply contemplative about what is right and what is wrong, and without working through any particular conflicts. These people are successful conformists and have good character reputation by virtue of adjusting to people around them and adopting an appropriate conduct as a by-product of that adjustment. The main characteristic of this personality type is the almost unconscious adoption of good patterns of conduct. Good character develops easily and naturally.
>
> An outgoing, amenable personality, a friendly disposition, and a lack of aggressiveness are essential to the Adaptive Person. Such people seldom have unusual desires, convictions, or interests. They can be absorbed in group patterns of behavior without any strain or difficulty because they are able to suppress easily any unique features they may possess. In an adolescent group the Adaptive Person does not have very strict moral criteria. Ability to take situations as they come and to live up to group expectations as they come are prerequisites of the successful social conformer.
>
> An important factor in the development of personality is, of course, the nature of the family relationships. The Adaptive Person must have had an affectionate, permissive family environment. Discipline must have been easy, and the child must have been given a complete feeling of security and affection in the early years. The moral views of the parents are broad and tolerant so that they do not set restrictions on their child's social participation. . .
>
> The Adaptive Person seems unusually mature in his social contacts during adolescence. He gets along well and easily with both sexes

> and has a greater fund of experience in human relations than most others of his age. (Havighurst and Taba, 1949, pp. 134, 143, 145).

Again it is the similarities between this description and that of our Adjusted subjects that seems to us more striking than the differences. Like Havighurst and Taba's Adaptive Person, our Adjusted adolescent also seems to have "an outgoing, amenable personality, a friendly disposition, and a lack of aggressiveness." He, also, seems capable of being "absorbed in group patterns of behavior without any strain or difficulty." There seems to be some similarity also in the family background of these adolescents. Although the evidence is far from conclusive, there are indications that the Adjusted adolescent, like the Adaptive Person, "must have had an affectionate, permissive family environment. Discipline must have been easy and the child must have been given a complete feeling of security and affection in the early years."

Contrasting their two types of adolescents, Havighurst and Taba state:

> The Adaptive Person has a highly developed ego or sense of the relation of himself to his environment. His sense of self enables him to size up the reality of various situations and to respond to them readily and effectively in ways which bring a maximum of pleasure and success. His ego develops in the direction of identification with the group, in contrast to the ego of the Self-Directive Person, which seeks gratification through personal attainment and personal recognition.
>
> The Adaptive Person contrasts with the Self-Directive Person also in severity of conscience. The severe conscience of the latter makes him cautious and self-critical, whereas the permissive conscience of the Adaptive Person allows him to act with great self-assurance.
>
> Adaptive Persons take on the beliefs and principles of their social environment readily, without much question and without much inner commitment. They seem to have no moral struggles.
>
> On the other hand, Self-Directive Persons are prelective and critical concerning morality. Although their moral behavior may be very similar to that of the Adaptive group, they are characterized by

> self-doubts and turmoil over the moral choices they must make. They are engaged in the painful process of working out moral principles for themselves. (Havighurst and Taba, 1949, pp. 145, 183)

Another formulation that might provide a conceptual setting for the findings of this study was suggested by one of the present authors in an article dealing with changes in our society's value system. (Getzels, 1958). In essence, it was argued in this article that the dominant secular values of our time are undergoing a rapid and crucial transformation which can be conceptualized as a movement from *traditional* to *emergent* values. Within this broad movement at least four major types of value shifts may be identified. These are:

1. *From work-success ethic to sociability*. Instead of the work-success ethic, there is an overriding value of sociability and frictionless interpersonal relations.

2. *From future-time orientation to present-time orientation*. Instead of future-time orientation and consequent self-denial, there is a hedonistic present-time orientation.

3. *From personal independence to group conformity*. Instead of independence and the autonomous self, there is compliance and conformity to the group.

4. *From Puritan morality to moral relativism*. Finally, instead of Puritan morality, or at least moral commitment, as a value, there are relativistic moral attitudes without strong personal commitments.

Certainly it would be an exaggeration to say that our Moral subjects personify the traditional value orientation and the Adjusted subjects the emergent value orientation. Nonetheless, the similarities between these formulations and the descriptions of our groups are undeniable. The Adjusted subjects do seem to prefer social intimacy to personal success, to seek experiences that are immediately enjoyable as against those that hold the promise of future gratification, to find more satisfaction in sharing experiences with others than in asserting their own independence, to be willing to sacrifice an extreme moral commitment in the interests of interpersonal harmony. These trends appear to be reversed in the case of the Moral subjects.

Admittedly, our sketches of these two experimental groups resemble caricatures, as they must in any analysis as gross and exploratory as the one presented here. The typology of Havighurst and Taba and the value-shift formulation of Getzels are also oversimplifications of reality as the authors themselves acknowledge. Nonetheless, the essential point remains: In the two groups we have described here and in the theoretical formulations we have drawn upon there exists evidence of the identifiability of two very different types of children, each exhibiting characteristics of considerable importance to psychologists and educators alike. Whether one type is becoming"extinct" in our society, or whether one type is "better" or more "desirable" than the other remain questions that, in our opinion, are worthy of considerable study.

## Chapter V

# CLINICAL STUDIES

The preceding sections of the report were devoted largely to grouped or quantitative data. All high IQ, high Creativity, high Psychological Adjustment, and high Morality children by our definition--no matter how idiosyncratic in other respects--were classified together, and differentiated *as groups* from each other. To be sure, this four-fold classification is more revealing than, say, a two-fold classification. But *any* grouping is bound to obscure *individual* characteristics. Necessarily, generalization is gained at the expense of differentiation, quantitative abstraction at the expense of qualitative specification. The numerical average hides the clinical detail.

In this section we shall present two clinical studies specifying and, we hope, enriching by qualitative detail the quantitative findings already presented. The first study deals with three girls having the highest IQ scores in their class. The second study describes in some depth a high IQ girl, a high Creativity brother and sister, a high Morality brother and sister, and a high Psychological Adjustment girl and their family environments.

### Mary, Jane, and Betty: All the Same and All Different

As has been suggested, the numerical description of any human function is necessarily an abstraction often obscuring significant individual variabilities. Intelligence as measured by the IQ metric surely predicts to school achievement in a group, but no two individuals with the same IQ in the group will inevitably achieve the same grade. Nor is the failure to attain a standing putatively commensurate with the IQ the result, as is so frequently supposed, only of emotional disturbance or psychopathology.

We present here the case reports of three of our students, Mary, Jane, and Betty, who, as one of our observers remarked, are all the same and all different--all the same in IQ and all different in behavior. The three girls are at the very top of their class in intelligence, having the very similar high IQ's of 157, 153, and 149 respectively. They vary greatly in their productivity, school achievement, areas of accomplishment, and ability to understand and manipulate cognitive material. Indeed, one of the girls is at the top of the class in achievement, another fluctuates about the mean of the class and has only a B- or B average.

Mary is a seventeen year old who is gifted in almost everything, or at least so it seems. She has the highest IQ in her class, 157; she is high on the California Test of Personality; she ranks high in Creativity according to our tests; she shows a wide range of interests on the Activities Questionnaire. Our raters considered her very good looking. Her classmates believe her outstanding in many prestigeful qualities and give her a "high saliency" score on the Outstanding Traits Test. This, it may be recalled, was a sociometric-type instrument requiring each child to rank in order of importance thirteen personal qualities (e.g., IQ, athletic ability, sense of humor, creativity) and to name a classmate outstanding in each of the areas. The total number of mentions an individual received determined his "group saliency": the relative importance of the child to his peers.

Mary's high saliency score indicates that she is important indeed to her peers, and that they consider her creative, humorous, emotionally stable, able to get along well with others, and having a wide range of interests. It is incidentally worth noting how close this evaluation by Mary's classmates is to her own performance on our test battery. She does not, however, receive any recognition for having a high IQ or for getting good grades. This is not surprising, for despite her high IQ, her achievement scores are well below the top 20% of her class, and she is only a B or B- student. The judgment of her peers seems to be that if there is no production in the form of good marks, the individual cannot have a high IQ.

The teachers of the school like her. From comments on her record over the years we find that her teachers consider her talented in all areas: intellectual, social, musical, and artistic. She is also consistently rated as well-adjusted, considerate and co-operative, and sought after by peers. There are, however, notes throughout the years to the effect that she should try harder--that she is not utilizing her intellectual capacities to the utmost (one presumes the teachers meant in getting better grades).

Why doesn't she? The answer does not appear to be in the realm of emotional disturbance or psychopathology. As we have seen, her performance on the California Test of Personality is superior, her peers see her as emotionally stable, her teachers rate her as well-adjusted. An analysis of both the self-report and projective Sentence Completion material also reveals a well-integrated girl. She believes others see her as "witty," "satisfactory," "an interesting teen-ager," "mature and pleasant." She herself thinks she is "capable," "pleasant," "doing well," but with some negative traits, chiefly "laziness" and "lack of responsibility." Despite this, her attitude toward responsibility is generally positive. As she indicates on one of the

Sentence Completion items, when given a job with responsbility, she "groans, may be momentarily thrown, but can handle it." She can do it if she has to, especially if it is worth doing. From the same source we learn that she can do things if she tries; sometimes feels school is a waste of time, "it could give more than it does"; she studies hard to go to a good college; she would not be afraid to leave one job for another if it were worthwhile.

When ranking the thirteen personal qualities on the Outstanding Traits Test for their importance to her personally, Mary rates sense of humor and school marks higher than her classmates do, and wide range of interests lower. However, she explains in her autobiography that concentrating on a single activity like good grades to the exclusion of other interests seems like a "waste of time" to her. The values she expresses on this instrument fit her conception of herself and her environment. She is a witty, pleasant individual, who is under no pressure to produce anything, not even in school, merely because it is expected of her. She says of herself that she is "a bit lazy," although others might say rather that she is "just relaxed." In any case, she feels that the real importance of grades is that they make other more important things possible, for example, entrance to a good college where she will be able to use her talents as independently and fruitfully from her point of view as she is now doing in high school.

She has a positive image of her family, and there is no hint of the kinds of adolescent conflicts apparent in many of her classmates. She states in her autobiography that she has internalized her mother's ideals and is very close to her. On the Sentence Completion Test, when asked, "When they try to make me be like my mother or father, I . . .," she says simply, "They don't try." She is low on the "parental control" scale, and there appear to be few difficulties and tensions in the area of family relationships. As she says with respect to this, if she could start all over again, she would want things the way they are.

The over-all impression is of a well-functioning young lady who is enjoying her abilities and utilizing her talents to make her life as rich and pleasant as possible. She has few problems in any of the major areas of development: friends, family, interests, school. She is well-accepted by her peers and gets along well with her family, but is nevertheless an independent individual capable of making her own decisions. She recognizes that she is not doing as well academically as she might or others expect, and she has momentary qualms about this. But these are only momentary. There are more important things than grades, and she intends to go on relishing her other interests and activities. To be sure, school is sometimes fun and worthwhile, but sometimes it is just a waste of time, and there is no reason to behave as if it weren't. She is happy with the choices she is making, and if she had it all to do over again, she "wouldn't change a thing."

Her view of the future is a happy and confident one. She states in her autobiography that she likes all her subjects and teachers, and that she wishes to obtain a background in many areas before specializing in one. She would like to attend a college that will give her a well-rounded education, and she would like a career that will involve working with and service to people. She realizes that there are many such schools and many such careers. Mary is not afraid—she has no reason to be.

The second case illustrates an entirely different use of intellectual power. If Mary is well-rounded and relaxed, Jane is single-minded and under pressure. She must excel, she must achieve, she must be first. When asked what her chief aim in life is, Jane does not say just go to college, but to a "good Eastern college;" not just get a job, but a "well-paying job;" not just be married, but married "before she gets too old."

By "good Eastern college" Jane means something besides educational opportunities. Her parents have made considerable progress up the social scale, and when they state their desire for their daughter, it is obvious that they intend her to continue this progress.

Jane's IQ is 153, the second highest in the class. But she is not within the top 20% on any of the Creativity tests except one, the arithmetical Make-Up Problems, one of the more controlled of the creativity measures. She ranks high on all the Morality tests, including the measure that correlates inversely with Psychological Adjustment. She is high on the "parental control" scale, reporting that her parents keep a close watch on all her activities. On our Activities Questionnaire, she is high on the "narrow interests" scale--she had never done the activities mentioned and never intended to--again a measure that correlates inversely with Psychological Adjustment. Indeed, she is not in the top 20% on any of our measures of Psychological Adjustment. And perhaps most striking, despite her high IQ and her need to produce, her achievement scores are exceeded by almost 20% of her classmates.

On the Outstanding Traits Test she receives votes mainly from her two best friends, who see her as high in getting along with others, character, health, emotional stability, goal direction, and school achievement. She does not have "high Saliency" for her other classmates.

Through the years the teachers have described her as eager to learn, studious, and capable. They have been fond of her for these reasons.

Jane's picture of herself is not as positive—she finds living up to the expectations a strain. On the Sentence Completion Test, she says others think of her as "a brain," "pleasant but overweight," and that her teachers' opinion of her is "good." She says she thinks of herself as "more intelligent but less physically attractive than others" (despite the fact that our observers rated her appearance favorably), "unattractive," "lacking self-confidence," "fat," "inferior," "ugly," "not very dependable," "wasting her youth." And what is perhaps most revealing of all, if she had it to do all over again, she would, she says, "form better study habits." If only she could get even better grades!

There is a refrain throughout the protocols suggesting a desire to have the pressures released, to get out from under the demands she feels upon her, either by becoming more capable of coping with them—"forming better study habits"—or by "quitting." In her autobiography she states that despite her best efforts, school work takes up almost all her time. One may infer that this is the reason she rejects so many of the interests on the Activities Questionnaire—she is having enough trouble keeping up with the things she has to do without adding things she may want to do. Indeed, she complains she does not have enough time for even the free reading she would like to do.

Jane seems to regard her family chiefly as a source of pressure—pressure to be like her able father, pressure to get good grades, pressure to make something of herself. She states rather dolefully on one of the protocols that she wishes her father were not so definitely the head of the house. She wants to turn from striving after a successful career—a basically masculine image—to a succesful marriage—a more feminine image. As she says to the Sentence Completion item that suggests she be like her father, "That's what I used to want to be." She rejects her mother too, but more the mannerisms than the total personality.

Yet she cannot reject the single-minded responsibility that she feels is hers—to do as well in school as is possible. As she indicates on the Sentence Completion Test, she perseveres because she "must demonstrate her ability to fulfill the task"; when she fails, she feels "horrible"; she would give up trying if she couldn't "excel." She states that school "takes up all her time"; she studies hard because of "pressure to get good grades"; she tries to get ahead because she "must be above average." When ranking the thirteen personal qualities on the Outstanding Traits Test, energy and achievement in school are higher values for her than for her classmates, getting along with others and emotional stability are much lower.

But, as has already been suggested, the protocols indicate also a wish to relax, somehow to circumvent the pressure to achieve. Marriage seems to her one way out. When asked what she would do if the choice of an occupation were left up to her, she says firmly, "Permanently I want marriage"—"permanently" is underlined. But even here, it isn't just marriage. When asked what might make her quit a job, she says if only a rich man would come along and marry her.

The over-all impression is of a gifted young lady whose productivity is being cut down by an overwhelming urgency to achieve and the resulting threat that each new achievement task engenders. Suppose she does not excel or even produce! This anxiety acts like blinders, keeping her eyes only on the "main chance"—school achievement as represented by good grades--and blotting out almost all other interests. The fear of failure prevents her enjoying her own abilities or the learning situation.

Betty has the third highest IQ in her class, 149, but she is sharply different both in her personal and cognitive behavior from either Mary or Jane. She uses her intelligence as a potent defense against the world. Like Jane, she feels under great pressure to produce and perform, but she has developed an acute sense of humor with which she can protect herself. For instance, when asked to reveal herself in the autobiography she begins her account with: "My mother and father are very intelligent people. I sometimes think I was adopted." When confronted with the last rather complicated card of the Rorschach Test, she cannot at first come up with the good, high-level response she would like to give. Since she cannot deal with the whole card, she takes a very small segment often seen as two spider-like objects on either side of a pole, and responds by describing it as: "Two decay germs attacking a tube of Ipana toothpaste."

Betty is high on almost all the Creativity measures. Her Psychological Adjustment scores are immediately below the top 20% of her class. She is high on our Morality Tests, except on the one measure that correlates inversely with personal adjustment. On the Activities Questionnaire, she is high in most areas--she is doing many things, she has done many things in the past, and the things she has not done she would like to do. Despite this apparent freedom to do anything she wants, she scores high on the parental control scale, a seeming contradiction to which we shall return.

Her achievement scores are the highest in the class, and her grades are superior to those of Mary or Jane. She does not receive a "high saliency" score from her classmates, but she is seen quite consistently as outstanding in IQ and school achievement. She also receives some votes in energy level and goal direction.

Despite the superior achievement, Betty's teachers do not like her as well as they do the other two girls—indeed some of her teachers do not like her at all. They do not appreciate being the target of her humor, even if it is bright. She is described by them as studious and eager to learn, but also as uncooperative and inconsiderate. The teachers think that she is over-competitive and should "tone down" this trait a bit. Betty seems to realize this.

Her self-image is not altogether positive. She qualifies all statements about herself. On the Sentence Completion Test, for example, she says people think of her as *fairly* bright, *fairly* intelligent and mature; she herself thinks she is up to par *or* an idiot. When asked about her reputation or other potentially threatening questions, she uses humor to avoid answering: My reputation is—" I am exceedingly wonderful and modest too"; "When I feel myself to be on trial—I plead insanity."

It will be recalled that the Sentence Completion Test had two forms: the direct, where the subject responds to a sentence-stub phrased in the first person, and the referent is clearly oneself—e.g., "When I feel myself to be on trial, I . . ."; and the indirect, where the subject responds to a sentence-stub phrased in the third person and the referent is ambiguous—e.g., "When Judy feels herself to be on trial, she . . ." This was done to elicit two levels of response, one a self-report, the other in effect a projection, and to permit examination of the difference between the two levels for any given person. The results in Betty's case were quite illuminating. To the first person stubs she is likely to give defensive and cynical responses as in the instances already cited. But when she is no longer confronted with the direct form of the test, which asks that she reveal what she thinks and feels, but is required on the indirect form to project her reactions to others remote from herself, she becomes much more positive and straightforward, even warm, in her responses.

Betty views her family as a pleasant one and as giving her a "lot to live up to." She sees her parents as very intelligent and very busy. She thinks of herself as "all right," but resents comparisons between herself and them. If, as one of the Sentence Completion items suggests, people try to make her be like her father, she replies tartly, there are"certain basic differences." Although she is competitive, and surely not as "gentle" as Mary, she does not seem driven--at least not as driven as Jane. She feels capable of accepting responsibility and performing adequately. She is not likely to be overcome by fears of failure or by failure itself. As she says, if a job were too much for her, she would ask for help; if she failed a test, she would ask to take it over again. Getting ahead, she states, is something one does to conform to society--so she studies hard to go to college. In her autobiography, she says that she hasn't picked a college yet, but there are indications it will be a good Eastern school. There are many references to marriage throughout her protocols, and it is apparent she prefers marriage to a career.

Her parents, however, say that she has expressed interest in a career but constantly changes her mind as to the specific type of career. They say that they themselves do not care which career she does choose, since they feel she is gifted in many ways, but their primary concern is that she does something that will allow her to express her abilities. This in effect is the source of pressure Betty feels. The parents believe they are being liberal--they are restraining themselves from choosing a particular career for their daughter. But they are exerting pressure that Betty achieve success. They are being "liberal" only with respect to the area of success. And by success, they do not mean as a housewife, a mother, or a popular teen-ager, or even as a happy well-adjusted person. When they refer to her abilities, they mean intellectual abilities, and it is within this realm that they allow her freedom to choose the specific area of success. What at first look like liberal--even permissive--parental attitudes become on closer inspection quite restrictive by this subtle but strong demand for a career.

As we have already indicated, the girl is aware of this demand, and has some insight into her conflict about it. Despite the freedom to enjoy many interests, she scores high on the parental control scale. On the Sentence Completion Test, she expresses distress at being compared to her family. On the Outstanding/Traits Test she rates "good looks" rather than "achievement" much higher than her classmates do. She states that she would prefer marriage to a career. Throughout the protocols there is evidence that she would like to assume a more feminine role. She would like to become less compliant to the demand for success, less competitive, and perhaps then less prone to biting, defensive humor.

The over-all impression is of a well-functioning young lady, who feels under some compulsion from her parents to produce and perform. In spite of this conflict, she is getting along well and probably will continue to do so, for she has good insight into the source of her tensions and her anxiety about them. She uses her highly developed sense of humor to defend herself against the conflict between her parents' wishes and her own, and against any other situation that threatens to become overwhelming.

Having described the three girls in rather broad clinical terms, we want to turn finally to their specific performance on two of the instruments. We have already noted that despite their similar IQ's, Jane did not do well on the Creativity battery, but both Mary and Betty did very well indeed. We noted too, however, that although Mary's creativity and humor were recognized and appreciated by her classmates, Betty's were not. The reason for these differences may be inferred from an examination of the responses given by the three girls to two items of the Fables Test. This test, it will be recalled, consisted of incomplete fables to which the subject was asked to supply three endings; one moralistic, one humorous, and one sad.

The first fable reads:

The Mischievous Dog

> A rascally dog used to run quietly to the heels of every passer-by, and bite them without warning. So his master was obliged to tie a bell around the cur's neck that he might give notice wherever he went. This the dog thought very fine indeed, and he went about tinkling it in pride all over town. But an old hound said,

Mary responded:

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| Moralistic: | You are ringing out your guilt. |
| Humorous: | For whom does the bell toll now? |
| Sad: | People will now be able to hear you, and you will no longer have the fun of biting them. |

Jane responded:

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|---|---|
| Moralistic: | Pride comes before a good kick in the head. |
| Humorous: | The tinkling bell will toll the parting dog. |
| Sad: | The bell will give notice of his demise one of these days. |

Betty responded:

Moralistic: He who is loudest in announcing his arrival is often softest in the head.

Humorous: Don't broadcast bad breath!

Sad: "Life's but a walking shadow. A poor player that struts and frets his hour upon the stage, and then is heard no more."

The second fable reads:

### The Peacock and the Eagle

> The peacock, spreading his gorgeous tail, stalked up and down in the most stately manner before an eagle, and ridiculed him for the plainness of his plumage. "I am robed like a king," said he, "in gold and purple and all the colors of the rainbow, while just look at your plain coat." "Tut, tut!" said the eagle,

Mary responded:

Moralistic: You cannot tell a bird by his feathers.

Humorous: I'm a plain clothes man for the F.B.I.

Sad: The better to prey on you, my dear.

Jane responded:

Moralistic: Beautiful feathers are only skin deep, you know.

Humorous: You are only a cocky cock, I am a legal eagle.

Sad: Just as he rose and grabbed the peacock in his talons. The next minute all the beautiful feathers were stained with blood.

Betty responded:

Moralistic: Beauty is only skin deep.

Humorous: How will it hold up under atomic fall-out?

Sad: No doubt you'll make a lovely target come the hunting season.

Jane's humorous responses, although bright enough, are rather strained. But consider the difference between Mary's and Betty's responses. Mary's humor is whimsical and gentle; Betty's is sharp and aggressive. In the one case where Mary asks deftly, "For whom does the bell toll now?", Betty attacks directly, "Don't broadcast bad breath!" In the other where Mary's response is a subtle play on the term "plain clothes man," Betty's is a menacing, "How will it hold up under atomic fall-out?"

The second instrument to which we should like to refer is the projective story-telling test. It will be recalled that the subjects were shown a picture-stimulus for 20 seconds, and then were given four minutes to write a story about the pictured scene. The variations in the stories illustrate dramatically both the cognitive and the affective differences between these girls of similar IQ.

The first stimulus-picture is of a young man sitting on a fence next to an older man who is leaning against it. The setting is a rural one and both figures are looking out at the surrounding countryside. The scene is frequently perceived as a father-son conference, and the stories often depict family relationships.

> Mary's story: A father is visiting his son, who is spending the summer working on a ranch in South Dakota. The boy is very impressed with outdoor, rough-and-ready ranch life, and would like to become a professional cow-hand. His father, who is very concerned about his son's desire for he wants him to go to a good eastern college and have the education to enable him to perceive and enjoy life a little more than the ordinary cow poke is able to, is carefully and tactfully persuading him away from his intent. He assures the boy that he will be able to return the following summer, and also states that after two years of college he will be free to choose.

> Jane's story: It is summer, and Bill and his family are vacationing on a farm. His father, who only comes out on weekends, had found him sitting meditatively on the fence. Bill is thinking "I've got to tell him soon I won't go to college, that I want to stay and learn how to raise cattle." At first he says, "Dad, isn't this kind of scenery just breath-taking?" His dad

doesn't give him a chance to unburden himself, but goes on with talk of the weather. In the picture, Bill is trying to find the right words, but he won't get a chance.

> Betty's story: This picture depicts the obtaining of a new line of Hathaway shirts. The man with a leer in his eye has traveled miles in search to find a new line of shirts of distinction. Now he is discussing terms with the hick on the fence. A peek into our crystal ball tells us that the same sweaty dirty shirt will probably appear some time next year, retailing at $12.50 and up, for men of distinction. (Note: the scout is obviously traveling incognito as his eye patch is missing.)

The second stimulus-picture is of a man reclining either on a plane or train seat. His eyes are half-closed as if he were dozing off, and there is an ambiguous expression on his face.

> Mary's story: This is a busy business executive who is flying to his family in their cottage after a long, tedious business trip. He is staring out the window at the fleecy clouds thinking about his wife and two teen-aged daughters whom he will be seeing in less than two hours and who this morning were 1000 miles away. He looks to his stay in the country with pleasure, for he will really be able to relax and let down his hair for the first time in months. When he arrives at the airport, his wife and children are there to greet him and they drive up to the cottage where they have a wonderful two weeks.

> Jane's story: Travers is completely happy and content. He is on his way to his fiancee's hometown to be married. All is agreed upon, the wedding plans are all made, and his girl plans to meet him at the train station. He's thinking, "How lucky can one guy be, to find such a perfect girl." Five seconds later the train goes into a tunnel. Coming from the other side is another train and the terrible collision wrecks the first two cars completely. Injured and unable to get out, Travers lies in the dark moaning. He dies just at the time he should have met his wife to be.

> Betty's story: This is Ralph Furshunginer on board the Tuna taking the first trip to the moon. Unknownst to him the glob that his is comfortably leaning on is not a pillow, but a mass of living, writhing protoplasm. The monster extends a quivering pesudopod. With a yelp, Furshunginer raised his space pistol and fires a stream of energy at the beast. The amoeba finished ingesting his meal, burps happily, and settles back to sleep.

The family relationships portrayed in Mary's first story are serene and gentle, although not over-sentimentalized or unrealistic. There are real differences of opinion, the son does want to go one way, the father does want him to go another. But the issue is not thrust aside either by failure to discuss the differences openly or by reducing the situation to a farce. The father is greatly "concerned" for his child's welfare. He wants him "to perceive and enjoy life a little more." (And note, incidentally, the values Mary puts on education--not to attain money or career or fame, but "to perceive and enjoy life a little more.") The father is "carefully and tactfully" trying to persuade his son to his point of view. But ultimately it will be the son's not the father's decision. In two years when the son is older and better informed, he will be "free to choose." The presumption is he will choose wisely.

In Jane's story, the family relationships are quite different. The boy and the father are alienated; the father is with the family only on weekends. No feelings--neither of love, anger, or concern--are expressed. They communicate at the impersonal level of strangers--they make conversation about the weather. When the boy does try to break through to express his needs and aspirations, he can't find the words. He is fearful, and takes recourse in saying something about the scenery. The father is entirely oblivious of his child's needs, and does not give him an opportunity to say anything. He goes on talking about the weather.

Betty does not deal with the picture as a family situation or father-son relationship at all. She transforms the entire thing into a farce, holds up both figures in the picture to ridicule, and with this, takes a pot shot as well at American culture with its men of distinction, and of course it's psychologists who give tests of this nature. With one stroke, she has used her sense of humor to defend herself against a potentially threatening situation, one that might make her reveal more of herself than she wants, to satirize social conventions to which she must comply, and to express her hostility without fear or reprisal.

In the second story, Mary again gives a positive but not over-sentimentalized family portrait. The father does work hard, he has been tense and anxious. But now he is returning to his eagerly waiting wife and two teen-aged daughters (not unlike Mary herself, perhaps), and he will "relax and let down his hair." For the family is a place where one can relax and let down his hair--note the complete contrast with Jane's conception of the family in the preceding story. Mary's family have a "wonderful" two weeks together. Indeed, what else are families for?

Jane's second story dramatically illustrates her ambivalence toward marriage and family life, and the negativism, if not helplessness, with which she views her life-situation. The hero is happy--he is looking forward to marriage. All the plans one can make have been made. But life is a matter of "luck" and of "accidents," and one can't be that "lucky." There is an accident--a train wreck. The hero is hurt and "lies in the dark moaning." He dies "just at the time he should have met his wife to be."

Betty characteristically transforms this picture too. She again protects herself by reducing the situation to jocularity. The story is not of teen-agers and fathers, brides and bridegrooms. It is not even of people of this time and place. It is instead the story of a space-age scientist and a monstrous amoeba. The amoeba ingests the scientist, "burps happily, and settles back to sleep." She has again avoided expressing herself by circumventing the situation with wit, and the underlying hostility has once more been very neatly controlled and yet expressed with humor. We may perhaps say that if Mary is not afraid and does not need to protect herself, and Jane is afraid but does not know how to protect herself, Betty protects herself in order not to be afraid.

The purpose of the case studies was heuristic rather than didactic. We tried to discover the basic character of our three girls with the same high IQ rather than to offer advice on how to instruct them. The essential point, we believe, has been made: despite the similarity of their mental power, they are very, very, different in almost all other respects, and the sameness of their IQ fades into relative insignificance against the specific variations in their affect and behavior. Yet we cannot in good conscience quite play the completely detached observers. We do wish to say a word about the classroom situation--we shall say nothing about the family environment--in which our three children might perform optimally.

For Jane reduction in the pressure to produce is quite obviously of paramount importance. She might work best in a very permissive atmosphere, and we would suggest that this consideration rather than her high IQ might be the deciding factor in her classroom placement. She needs encouragement to relax and to enjoy school even if it means a temporary sacrifice in production. This objective might be achieved in a classroom where competition is kept to a minimum, and the teacher is impressed more by the child than by her high IQ.

Betty provides the school with a very different problem. She can produce in a competitive atmosphere without too much strain. Indeed, she often rises to the challenge of competition. There is, however, the danger of allowing competition to get out of bounds—she not only rises to it but defends herself against the possibility of failure by destructive humor. In effect, she says, if I make fun of the situation—reduce it by ridicule— I cannot be hurt by it. There is the hazard that this use of humor will become so permanently reinforced that she will not be able to respond seriously to any situation, however worthwhile. She needs a classroom atmosphere where both leading and following gracefully are expected and rewarded. The teacher, who is frequently the target of Betty's humor, should be aware of the underlying motive for the attacks—she should understand the source of the humor, not become annoyed by it as "just plain meanness" and try to retaliate in kind.

Mary will benefit from almost any learning situation, and if she cannot find such situation, she will devise one herself. Given her determination to fulfill herself (not the expectations of others), the school would do well to resist putting pressure on her to perform by their grade standards up to the highest level of her IQ. Instead, the wise teacher might relax and cherish the experience of a child who goes about learning through Education "to perceive and enjoy the world a little bit more."

## FOUR FAMILIES

### The Scotts and High Intelligence

Mrs. Scott is justifiably proud of her three children, Kathy, 24, Jim, 22, and Lois, 17. All the children had A records in high school, and the two elder children were graduated from college with high honors. However, for Lois, striving valiantly to live up to her siblings, the mother feels a special affinity and admiration. Lois is one of our high IQ children.

The Scotts' house is the epitome of upper middle class intellectual good taste. Decorated in an attractive, subdued manner, it shows no signs of ostentation. The furniture is simple; books and family momentos are arranged neatly; an extensive record collection is unobtrusive.

Mrs. Scott belongs in this house. She is an attractive, well-groomed woman with greying hair tightly pulled back into a bun. She is dressed neatly and conservatively. Her speech is precise and effective, always grammatically correct. Her voice is well-modulated. Mr. Scott, a handsome man, successful professionally, is present but does not intrude upon the family scene. As the mother put it when discussing discipline, "I was the only disciplinarian when they were young, and I had the responsibility for all the rules and regulations. I was more rigid than he was but fairer and more consistent."

Lois is a nice, quiet, reserved girl who uses her high IQ to excellent advantage in school. Although her scores on the standardized achievement tests are immediately below the top 20% of her class, her cumulative grade-point record is much better than this. She has received straight A's as final marks throughout high school, a feat not matched by any of her classmates. Her teachers feel that she has achieved this record at the sacrifice of spontaneity and enjoyment of learning. In her freshman year, she started with a B in science, and her teacher recorded the comment that the grade would have been higher if she had relaxed and not tried so hard. It is doubtful whether she followed this advice, but by the end of the year she did receive an A in the course.

Her classmates see her as strongly invested in school achievement. On the Outstanding Traits Test, she receives 15 votes, six for high marks, six for goal direction, and one vote each for character, IQ, and range of interests. She obtains strong support for this heavy investment in intellectual achievement from her mother, who is very proud of Lois' school record even though she deplores the nervous tension the girl exhibits before examinations. When entering Lois in junior kindergarten, Mrs. Scott wrote the school a note criticising what she considered the unwarranted emphasis on social adjustment. She described her daughter as a scholarly, introverted child, and she believed that the school's predilection for sociability might create problems for the little girl.

The mother still feels this way, and in the interview she takes occasion to comment that one of her dissatisfactions with the school was the social emphasis: "In the early years the social adjustment aspect was overdone; this has been changing slowly over the years." Mrs. Scott believes that individuals should work up to the highest standards possible. In answer to the question, "What does Lois do nowadays that makes you proud of her?", she replies without hesitation:

"She does the best she possibly can in everything that she undertakes. She tries very hard in school and at her job in the summer. I consider her a conscientious and effective worker." To assure that the girl continues to make her proud in this way, the mother applies steady surveillance, if not manifest pressure. When asked, "Do you talk with Lois about her present school life?", she answers, "Oh, yes. We expect a daily report at dinner timeof what she has done during the day, some complaint about some assignment or other. We have always shared her school life."

Through the years the school record shows Lois living up to her mother's expectations. In nursery school she is quiet, reserved, shy. In kindergarten she shows evidence of over-control and is very "choosy" in her friendships. Each year she makes good progress, and her teachers praise her study habits and high standards. They continue to comment on the exclusiveness of her friendships. They state she has a tendency to be over-sensitive. In high school the teachers see her as more studious than average, as having a generally beneficial effect on the group but as leaving leadership for others. They remark that she is accepted by her peers but she tends to be indifferent to them. They themselves rate her as average in their preference for having her in class, average in her peer relations, and above average in devotion to learning.

Lois would agree with these estimates. She realizes that she impresses people as reserved and as eager to do well in school. On the direct form of the Sentence Completion Test, she says others see her as "very serious, punctual and conscientious, quiet and reserved." On the indirect form, she similarly says that others see her as "a good girl, a quite mannerly girl, mature and reticent." She feels her family thinks she is "a well-behaving, hard-working girl."

Lois accepts and approves of her family's evaluation. She is glad to be doing what they think is right, and she is unconcerned with how popular this makes her at school. Again from the Sentence Completion Test: Compared with other people, I feel myself to be - "different in many of my standards and concepts"; From past experience, no matter what others might think, I myself know that I - "am going to get the things out of life that I want to get"; Stella often thinks of herself as - "a pretty lucky person"; From past experience, no matter what others think, Charlotte herself knows that she- "is a lucky girl"; The reason Marion tries to get ahead is - "to satisfy a drive to do well."

"To do well" means to do well in school. She writes in her autobiography, "Before I entered school I can remember how much I desired to go to school, for each day my brother and sister would go off to school and come back with such important and exciting stories to relate." This is a pleasant way of describing a family situation and sibling rivalry which was, in its day, not so pleasant. The mother's report of this formative period in Lois' life is rather more pointed. In answer to the interview question, "During Lois' earliest years in school, did the teachers call to your attention or did you yourself notice anything unusual about Lois and school?", she answers, "Yes. She was very bright and well-coordinated, had a lot of friends, but she also had a great need to do all the things her brother and sister did, which caused nightmares when she felt she was not succeeding. . . .That was one reason she liked horseback riding so very much. It was something of her own, and she didn't have to compete with her brother and sister. Her older brother and sister have had a very strong influence on her. She has always been insistent on doing what they have done. This has been the cause of her strong need for academic success. . . .

In the future, she may be interested in teaching because she wants to achieve and surpass her father, brother, and sister, all of whom are teachers."

The mother describes the situation accurately. The intense rivalry has produced a strong need to succeed. But the girl perceives it as coming from within herself, not from any external source. As she says on one of the Sentence Completions: The reason I try to get ahead is - "because of a pretty strong drive within me." Or again: The thing that makes me study hardest is - "a means of achieving an end"; The thing that makes Ann study hardest is - "her desire to graduate with honors." Lois realizes that this drive to graduate with honors is not without cost in tension and anxiety. She says: After I finish a test, I - "am a nervous wreck"; When I was told that I failed the test, I - "was very upset." It may be assumed from her record that this type of "upset" is rare, and that the tension she feels before a test is dispelled by the grades she achieves. She probably does not count the cost in anxiety an excorbitant price for the straight A's she has earned.

Sibling rivalry is not the only source of her drive for academic distinction. She has also acquired a good many of her mother's needs and ambitions. When Mrs. Scott was asked in the interview, "Would you say you brought up Lois differently from the way you were brought up?", she said in her precise and well-modulated way, "Yes, I gave her much more time and attention. I gave more thought to molding her life and character. I was more ambitious for her than my mother was for me." Mrs. Scott makes clear that she believes in the creative life. She says, "Being creative is to me the most important quality a person can have, not only for social good but for his own personal happiness. I think the world and the school do not emphasize this. They emphasize sociability and do little to stimulate real creativity, nor do they appreciate it as much as they should." She has been bound and determined that her daughter should be creative. She explains, "I have always felt that Lois had a good deal of literary ability. Unfortunately, she was encouraged to write and publish too soon, and rejection crushed her; but she does have narrative and dramatic ability. I think creative writing should be her best choice for a career, but she denies any capacity or interest in it now."

This ambition, which she has projected onto her daughter, reflects Mrs. Scott's ambition for herself. When she was asked, "We all know that being a parent takes a lot of our time and energy so that we often don't get to do many of the things we might have, but if you hadn't had any children, what are some of the things you might have done?", she laughed shortly and replied with the single word, "Vegetated", ending this line of inquiry and going on to another topic. She does not discuss her "professional" plans, which include going back to work and short-story writing. She has had some of her stories published in "little" magazines, and is an avid follower of writers' conferences.

Since the girl has otherwise internalized most of her mother's demands, there is little manifest conflict in family relationships. Lois does state that she does not want to be like her mother or father, and, as the mother explains, she has rejected the career picked out for her. But this is because she believes herself incapable of fulfilling the role, and if she undertakes something she wants to be sure she will succeed. As she says on the direct Sentence Completion Test: The reason she might give up trying is - "because she is certain she will not succeed." However, this aside, she has great admiration for her parents, and has only positive things to say about the family: My father - "is a kind considerate man"; Above all, I wish my mother were - "healthier"; My family - "is a fine upstanding family"; Like most people, I sometimes feel my family is - "a good one." Her responses to the Indirect Sentence Completion are in a similar vein.

Internalization of success as a life-goal has resulted in highly positive attitudes toward work. Exerting effort in the performance of a required task is much more satisfying than peer relations - perhaps even more important than family relations. This investment in work is not, however, gained, as we have seen, without underlying tensions in herself and, despite the outer serenity of the household, apparently in the family as well. Both the primacy of work and the underlying tensions in herself and in the family are well illustrated in the themes of her Need:Achievement stories. Here, for example, are two of the stories:

> Story 1: The boy in the picture is a U of C student taking time out of his studies to pose for a picture taken by his mother. The mother wants a picture of her handsome genius before he finishes his studies. The boy is forcing his smile and is waiting impatiently to get back to his studies. After this picture is taken the boy will throw a tantrum and then go back to studying for his comprehensive examinations.
>
> Story 2: The person is a business executive working on a project of major importance. This project will have work (sic) shaking effects. The man is feeling torn between going home to his wife and his important project. He has failed to call his wife and tell her that he will be late. His wife, who was planning a 5:30 dinner that evening will be furious because it is already 5:30 and he would not get home until 6:15 if he left at that moment because it is a 20 minute drive to his home in the suburbs.

Despite the possible underlying animadversions, however, Lois sums up her basic attitude toward life when to the Sentence Completion item, "If I could achieve one thing during my life-time, I would want it to be . . ." she gives the single word "Success." She feels competent enough to attain this goal, at least as she has defined it. She responds to the items: When they asked me to be in charge, I - "said that I would be glad to do so"; Most jobs with responsibility make me feel - "useful"; When told I will have to do the whole thing by myself, I - "am glad to do it." Lois will not try what she judges to be beyond her; hence her rejection of creative writing, for example. When she does try, she is sure it is in an area where she will succeed.

Therefore, while her teachers suggest that she unbend somewhat from her single-minded striving for A's, and her peer relations are not as warm as they might be, she is quite content with her present state of affairs. If she is a "nervous wreck" before a test, she invariably does get the A after the test. And so she completes the stem, "If I could begin all over again" with "I would be very much the same." Two factors probably contribute significantly to her satisfaction with herself and her mode of functioning. The first and most direct one is the positive sanctions she receives from her mother which reinforce all her strivings for success in school. The other and more indirect one is her hobby, horse-back riding, which she has made an integral part of her life, and which she uses as a relief from the competitive tensions. As her mother points out, this is something of her very own--away from the family and free from competition with her siblings. Indeed, the girl states quite seriously on occasion that her ultimate ambition as an adult is to go into some type of work having to do with horses. Her mother is not enthusiastic about the idea, and hopes that Lois will "outgrow this infatuation." As the mother says when asked, "What do you think Lois will be doing when she is thirty years old?", "Oh, she'll have three or four children and a nice home. I can't tell whether or not she will give up riding. She will take good care of her family."

Lois is now in a "prestige" Eastern college, and is beginning to make a brilliant record there, following the pattern set by her brother and sister. She cannot surpass them, unfortunately, - they were top students - but she will see to it that she does as well. She has at times toyed with the idea of breaking the family mold. She wanted to go to a small, not particularly noteworthy Western college, where she could ride horses to her heart's content. She has also considered the idea of leaving school altogether, becoming a secretary, and saving enough money to buy a horse. This idea may have been more serious at the time than it sounds now. But serious or not, it did not go over at home, and that was that. The mother says of this period, with her usual precision, "We insisted that she go to college and to a first-rate college, even when she said she didn't want to go." The battle was probably lost before it started, and Lois is now cheerfully doing as she was told, and doing it well.

Lois is not really unhappy with the way things have turned out. She is content to go along with adult expectations, and is well-satisfied with her present situation. The one thing she does insist upon is keeping her horses with her. As she says in the last words of her autobiography, "I hope to have horses of my own as an adult, and in all probability to do something professionally with them. I hope to marry one or two years after I graduate from college and have two children. I would have the respect of other adults."

## The Blacks and High Creativity

The father is a well-known biologist. The mother edited a small newspaper until the birth of her first child. The two children, John, age 17, and Joan, age 13, are devoted to the arts, he to music, she to dancing. Both children are members of our high Creativity group.

The family lives in a seven-room walk-up apartment in a deteriorated section of the city. The most striking characteristic of the apartment is the litter of books and magazines. Books by the hundreds are seen in the living room and in the hall, and they are veritably jammed into several of the other rooms.

Mrs. Black is a large handsome woman quite at ease with herself and the world, even in a house-dress split at the seams. When interviewed, she was relaxed, gracious, and frank about the family and its life together. She described the family as father-, not child-, centered. "Mostly," she said,"we talk about Papa." He has dominated and the children follow. He always seemed more needful than the children. This is not a child dominated household." Papa at home seems to be something of a cross between the terrible-tempered Mr. Bang, a wooly Teddy-bear, and Linus Pauling.

The mother views her role as the guardian of her children's health. She believes this is the only protection really worth giving children. As she says about her child-rearing practices, "I gave them the best food and nourishment that I could. I guarded their health, and I was not horribly serious with them. We enjoyed them." Except for nutrition and health, she believes in "live and let live" - not from lack of interest in her children's lives but from respect for their privacy. To the interview question, "Do you talk to John about his school life?", she answers, "Yes. But it takes a lot more drawing out. He doesn't talk too much. Just accepts it and wants to get it over with. I don't like to pry." She believes her children appreciate her permissive attitude. In answer to the question, "Do you suppose John and Joan feel you are old-fashioned parents or modern parents?", she says, "They think we are all right."

On her part, she is rather pleased with the results of her child-training too, and points out that her children differ from her as a child in that they are more "secure" and "independent." Although this leads to some stubborn disagreements between the father and the children, she speaks of her children's independence with pride. The differences among them - even the impassioned clashes between father and son - are not "personal," and do not bring into question the essential respect and warmth they hold for each other.

Just now the central disagreement between Papa and John is the choice of a career. The father wants him to be a scientist. John likes science well enough, but he prefers music. The mother describes the situation as follows, "He (John) wants to take art and music - lately he says he would like to be a psychiatrist. We thought he would major in math and minor in music. His father scoffs at the entertainment field. He prefers science." The mother herself is inclined to let John go his own way. When asked, "If you alone had to choose a career for John, what would it be?", she replies, "Anything at which he would be happiest and most fulfilled. It is a dilemma - math and music - I can't say. As he goes on, it will resolve itself."

Her attitude toward her son and his career remains essentially the same as when he first entered the Laboratory School in the freshman year. At the time she wrote on the application questionnaire, "We consider John gifted musically, interested in sports, and want him to be in this school because we think he is a bright, sensitive child who will respond to the enriched curriculum. At present, we do not have any future plans for him. We plan on sending him to college, but whether he will go on in science like his father or in the creative arts we do not know."

The boy would not really object to either area, but he resents his father's "pushing" him toward science. One result of this rebellion is a refusal to commit himself to the future. On the direct Sentence Completion Test, he says only: My ambition is - "Math," and he evades most of the other items dealing with future plans. On the indirect Sentence Completion Test, the careers he mentions vary widely, and he lists "doctor," "something with creative work," "musician," "actor." He states: Ray feels that his chief aim in life is to - "know how to live," and just now this is probably his underlying feeling about what he would like to achieve.

Occasionally, his schoolwork suffers from his disagreement with his father, and in the first quarter of the year he received a C in mathematics. The teacher pointed out that this was not due to lack of ability but to temporary erratic effort (to be borne out by the final grade of A). Most often, however, instead of acting out or not working, John uses his sharp sense of humor to relieve any strain he may feel. For example, a dominant theme throughout the interview with the mother is the "closeness" of the family ties. She says, "We always spend vacations together; we never go off and leave them. Our vacations are always spent together. My husband tends to be too exclusive - he wants them here and not with friends." The boy comments on this situation in his autobiography as follows, "Our family has always been closely knit. As a matter of fact, none of us can move a muscle without the rest of us having to twitch a little." Though he says this humorously, it is not meant as only a jest. He goes on, "Our family has not changed very much over the years. Dad's mane has gotten a little grayer. Ma is a good woman; my sister is retarded, all she does is play the old phonograph and polish her glass animal collection." He thus disposes of his younger sister, presumably an object of rivalry for some years.

The essential character of the father-son relationship is not contained in the sporadic flare-ups of conflict but in the underlying bonds of affection and even common interests. They spend much time and enjoy many activities together. They watch fights on TV and, as the mother puts it, egghead programs on Sunday afternoons. They play ball together, and the whole family joins in square dancing. When the boy was younger Einstein was his hero, and his father arranged a meeting. Now in adolescence, John started appreciating another hero, Mort Sahl. The father, who is considered quite a wit by the mother, probably appreciates Mort Sahl too.

Nonetheless, there is no gainsaying John's present resistance to what he perceives to be his father's, or for that matter any other adult's, infringement upon his privacy and independence. He responds quite directly on the Sentence Completion Test: I feel happiest when - "I am not having my personality pried into." In his autobiography, when asked to describe his favorite recreation, hobbies, and manner of spending Sunday afternoons, he writes, " I always liked to go out for sports, sometimes just because everyone else did . . .I read sex books for recreation, playing the piano is my hobby, and it's none of your business how I spend a typical Sunday afternoon." The same attitude is illustrated in his responses to the Need:Achievement Test. The sixth story is typical:

> As I sit here working at my beat up desk I think of how I used to feel pressed for time. I remember when I went to U High and I took some kind of personality tests. We sat all day and wrote and answered questions. I enjoyed it but I never wrote things vividy enough. Such as "the gaunt-faced man, beads of perspiration standing out on his face, his eyes bulging, made the supreme effort and fell trembling." Oh well . . . .

This reaction to tests and testers is characteristic of his approach to many potentially threatening life situations. Humor helps to preserve his autonomy without recourse to withdrawal mechanisms or open warfare, and he functions effectively.

Although his IQ of 127 places him below the class mean of 132, his achievement scores are well within the top 20% of his class. His teachers, parents, and peers consider him outstanding. He ranks high on all the teacher ratings, whether in preference for having him in class, relations to his classmates, or in devotion to learning. His parents regard him as gifted musically, excellent in sports, and an all-round bright sensitive person. He has high saliency for his peers - he receives 45 votes on the Outstanding Traits Test. And the votes are distributed through fully 11 of the 12 designated personal qualities. Many of the votes are for his athletic ability, which is corroborated by our own high rating for him in athletics. It is in some way curious that he received only two votes for humor, clearly one of his outstanding characteristics by our test ratings, and many more votes for emotional stability, morality, range of interests, and getting along with others. Here the perceptions of his peers are not corroborated by our tests. He is not in the top 20% of our Morality, Psychological Adjustment, and Activities measures. It may well be that his sense of humor, athletic ability, and high scholastic achievement combine to provide a "halo effect" that carries over to the other ratings.

He himself is not overly impressed with these attributed assets. Indeed, he seems skeptical of his reputation with teachers, family, and peers. He states on the direct form of the Sentence Completion Test that others see him as "making jokes," "being OK," "all right," "being a card." He finishes the item: From past experience, I know that my teacher's opinion of me is - "good"; and the item: I feel my family think I am -"OK." On the indirect form of the test, his feelings of mild acceptance turn into concern about his reputation and worry whether his humor is "going over." Here he states that others see him as "a good athlete," "a little dumb," "a wise guy," as "being a cornball." He finishes the items: From past experience, Walter knew that his teacher's opinion of him is - "not too high"; Ted feels his family thinks he is - "sort of silly."

John values his sense of humor and independence very highly, but sometimes he wonders whether he does not overdo them. On the one hand, he says on the Sentence Completion Test: From past experience, no matter what others think, I myself know that - "I can be funny"; From past experience, no matter what others think, Charles himself knows that - "he will do all right"; I often think of myself as - "a great wit"; Compared with other people, I feel myself to be - "rather different"; If I could achieve one thing during my life-time, I would want it to be - "independence." On the other hand, he expresses concern about what he considers to be his flightiness and his occasional propensity for antagonizing people. He says: From past experience, I think the worst thing about myself is - "flightiness"; From past experience, Ben thinks the worst thing about himself is - "he doesn't buckle down enough"; I feel that my chief aim in life is to - "not be obnoxious"; If Leo could begin all over again, he - "would not talk so much."

Despite these concerns, he thinks of himself as essentially a capable and worth-while human being. The recent clashes with his father and perhaps with others give him pause but do not alter his intention of sticking by his guns. He likes being humorous and he likes being independent. He is not ready to accept the blame for any interpersonal difficulties upon himself alone. Others have their faults too. As he says on the Sentence Completion Test: From past experience, I feel most people are - "inclined to be lazy"; From past experience, Lee feels that most people are - "not too humane." But this does not mean that he rejects others. He feels he can get along with them but he also believes it isn't worth it if it threatens his individuality. As he says: Working with others all the time makes me - "assimilate knowledge"; I think I am best at - "assimilating knowledge"; Working with others all the time makes Henry - "lose his individuality."

Besides, John is not altogether sure that the sober attitudes toward ambition and success that other people are pushing - and which are now being promulgated for him by his father - are unalloyed virtues. His humorous detachment toward these standards is expressed in his first story to the Need:Achievement Test:

> Freddie Jones was a nice boy. If you don't believe it just ask him. Freddie came from a theatrical family and wanted to be in show business somehow. However, the only talent he had was a nice smile. He posed for tooth-paste ads on T.V. You may think this is kind of low-brow, but I see nothing wrong with it. Freddie wanted to satisfy an ambition and he did it the best way in which he could. Freddie will never amount to much but he will be happy. How are you doing?

He does not, however, reject out of hand the conventional criteria of achievement, or his father's concern with his reluctance to select a "solid" career. He is aware of his own ambivalence toward responsibility—an ambivalence that is reflected in his responses to a cluster of items on the Sentence Completion Test dealing with responsibility: When I think that the odds are pretty much against me, I - "read a Pollyanna book"; When Ed thinks that the odds are pretty much against him, he - "steels himself and works"; When Dan thinks the job is too much for him, he - "keeps pitching but smiles to himself"; When they asked Al to be in charge, he - "declined smilingly"; When told he will have to do the whole thing by himself, Harry - "was disappointed"; When told I will have to do the whole thing by myself, I - "tell them to shove it." He seems to sum up his attitude toward work and achievement when he says: When I am asked to describe the work that might make me happiest, I say - "anything that isn't dull." He realizes that this may not be quite enough, but he does not believe that it is really necessary to be "putting out" all the time. He feels that he is doing "all right," and can take his losses with his winnings. As he says to the two "test" items: After I finish a test, I think that I-- "did well"; When told that I failed the test, I - "took it philosophically."

All in all, although not quite as carefree as he himself would like to believe, or as most people do in fact believe, John is, as he says, doing "all right." The current conflict with Papa may interfere temporarily with his functioning somewhat, and it certainly does bring into question his attitudes toward himself and toward others. But there is always Ma to provide nutrition and understanding, and the family attachments remain warm and strong. Under stress, John characteristically turns to humor and re-striving rather than to anger or dejection. He can view his father, the closely-knit family, and himself with a twinkle, if not entirely without a "twitch," and he can resist what seem to him infringements upon his wit and independence. At least for the present, he will take his set-backs "philosophically," try "not to be obnoxious," but maintain his goal of "knowing how to live." Whatever else, he is not going to be any Freddie Jones if he can help it.

Joan, as a second child, has had an easier time of it, although she too has her troubles with Papa. Her mother says of her, "She has always been strong-willed and has bossed the family. I didn't want teachers to put pressure through me for her to conform. She got bored with school because she was advanced, so I let her stay home often in her earlier years . . . I am glad she has a feeling of triumph and confidence in facing the world. It's not so important what she does - the important thing is that she thinks she is better . . . I had to discipline her more than I did her brother because she was more willful - with her, spanking was effective because she was so strong-willed."

The girl has reacted to her mother's combined attitude of pride in her assertiveness and desire to tone it down by openly acknowledging her flaw - but with such good humor that it becomes attractive or at least irrelevant. Here, for example, is an illustration of her attitude toward the aforementioned troublesome assertiveness taken from the first words of her autobiography, which incidentally she entitled "My Life, or the Downfall of Humanity":

> A shriek ran through the halls of the hospital. It was the nurse. In the process of being born, I had kicked her in the stomach. I was little and round and red. I am no longer red or round, but I am still little.
>
> As a nursery-school child I was bashful. While the other children romped and played I hung back in the corner. The teacher tried to make me join the happy throng and I took a bite out of her ankle. Ah, my carefree childhood . . . Surprisingly enough I have lived up to this age.

We would venture to say that people are not so much conquered by her assertiveness as surrender to her drollery. She is a delightful child, and her peers give her 20 votes on the Outstanding Traits Test, mainly for humor, good looks, and emotional stability. Her teachers rank her high in preference for having her in class, high in peer relations, and give her the top rating for love of learning. Although her IQ of 135 puts her at only the class mean, she is an excellent student and is in the top 20% on the standardized achievement tests.

Like her brother, Joan was transferred to the Laboratory School - in her case, in the 7th grade. Her mother wrote on the entrance questionnaire, "The child loves to dance and is physically attractive. We feel she has talent for managing people and projects, and we expect her to find her niche in the creative arts -- dancing, drawing, or costume design." Her former school considered her a superior pupil in all areas. They reported, "The home for the last two years has been somewhat unstable but Joan has shown little ill effect." At the Laboratory School, the mathematics teacher initially reported that she was somewhat immature in her reactions, and the home economics teacher commented, "Joan tried hard but she was hampered by lack of understanding of working with a group of students." Nevertheless she received good grades in these as well as the other subjects, and her teachers reported - as they continue to report - that she is a "joy" to have in class.

Joan is more aware than her brother that people enjoy her, but, like him, she cannot avoid some doubts about the image she presents. On the direct Sentence Completion Test, she says others think of her as "very sweet," "very friendly," "a pleasant girl," "what I am." On the indirect form, she is not so sure, and her completions contain such reactions as others think she is "very unreliable" and "very immature." In giving her own estimate she tends to see herself as rather superior and aloof, and to feel somewhat guilty about these qualities. For example, on the direct Sentence Completion Test, she says: Compared with other people, I feel myself to be - "at least as good if not better"; I feel there is nothing worse than - "a snob who has no reason to be a snob"; The thing I regret most is - "that I have not been more honest"; From past experience, no matter what others think, I myself know that I - "am not as bad as all that." On the indirect form of the Test, she expresses greater fears about her feelings of superiority and aloofness. She says: Compared with other people, Blanche feels herself to be - "very superior"; The thing that Karen regrets most is - "that she is not considerate"; From past experience, no matter what others think, Charlotte herself knows that - "she has some good traits"; Stella often thinks of herself as - "an outcast"; If Lois could begin all over again, she - "would think more of others."

This does not mean that she is going to reform. It is perhaps the ruling tenet of her behavior that she be free of restraint. Her response to the following item is characteristically expressive, and one may venture to say prophetic: I feel happiest when - "I am running with the wind streaming through my hair." It is not surprising then that, although she thinks of her parents as being pleasant enough, she has no intention of identifying with them. Toward her mother she feels that she need only make an assertive statement on the question of identification: When they try to get me to be like my mother, I - "tell them that I am me." And that's that. A rather nice vignette, incidentally, of the mother's appearance, housekeeping habits, and personality as seen by her daughter is caught in three items of the Sentence Completion Test: Above all, I wish my mother were - "thinner"; If my mother could change, I would want her to be - "more domestic"; My mother - "is a satisfied woman."

Toward identifying with the father there is a greater intensity of feeling and vehemence of expression. There is already a running battle with him about whether she should or should not go to college, although the event is four years or so off. She differs here from her brother, who goes along with his father's insistence that he attend college, resisting only the specific career in science. She starts resisting at an earlier age, and has no intention of going along like her brother even part way and smiling to herself about the rest. She'll have none of it—neither college nor career. Her mother describes the situation as follows: "She says she is not going to college. She is not going to waste those important years. Her father thinks we have plenty to say and she must go to college. We have not resolved that clash yet." And so, although she has nothing against her father personally - indeed her reactions to him are remarkably free of hostility (e.g., My father is - "a professor"; Above all, I wish my father were - "richer" a frequent response for a professor's child ; If my father could change, I would want him to be - "taller") - she says firmly: When they try to get me to be like my father, I - "tell them I won't, can't, and don't want to be." There can be no doubt that she means it.

The mother is not concerned at all about her daughter's future. When asked, "When Joan is about 30 years old, where do you think she will be and what do you think she will be doing?", she says, "Have a baby on one hip and pulling another along, and doing choreography for a Broadway or neighborhood group. And I'll be hovering in the background and trying to help her."

Joan is peculiarly free of distrust of her own competence - her mother put it well when she said her daughter "has a feeling of triumph and confidence in facing the world" - and she responds with almost uniform affirmation to the series of Sentence Completion items dealing with responsibility. She says: When told I will have to do the whole thing by myself, I - "did it"; Most jobs with responsibility make me feel - "responsible"; When they asked Ann to be in charge, she - "was elated"; when told she will have to do the whole thing by herself, Harriet - "became industrious." Although it is taken for granted that she will do something professionally in dancing, she toys with many other possibilities and mentions more or less seriously as career possibilities: housewife, veterinarian, philosopher, farmer, teacher, doctor, movie star. She believes she is capable of doing everything she wants to do, and feels free to decline doing anything she is required to do if she so chooses. She does not need to prove herself with work and achievement - at least not by the standards of others. Indeed, her attitude toward work is rather whimsical, and she is not at all convinced that the way to self-fulfillment is through strenuous effort and striving for success.

This skeptical attitude toward "strive and succeed" runs all through Joan's responses to the Need:Achievement Test. The stories are, to be sure, work oriented, but she pokes fun at the orientation. Here, for example, is the sixth story, which incidentally may be compared to her brother's story to the same stimulus:

> Mr. McMacken came to his office early in the morning. He had an idea for the short story contest that had a deadline at 12:00 that night. He sat down besides his fellow journalists with a smile on his face. He began writing, writing, writing, he took no time out for lunch, but wrote. He was sure this would win the contest. After his fellow workers had gone, he was still writing. Surely this would win. He looked at his completed work, and then at the clock: 12:01.

This seems to be her answer to her father's insistence upon hard work and earnest preparation for college. She, as we have seen, would rather find her happiness "running with the wind streaming through her hair."

There is a natural inclination to compare Joan to her brother. Both children are outstanding in school and in acceptance by peers and teachers alike. Both are decidedly unimpressed by this. Mrs. Black is very proud that her children are less dependent than she was at their age, and it is this independence that the children themselves prize most dearly. Their love of freedom and sense of humor enable them to stand up to their father's sporadic forays against their autonomy. Whatever the disagreements with the father, it is obvious that they are still warmly attached to him and their rebellion does not threaten the close family ties or their own creative interests. Life with father may be explosive, but it is not shattering. They still watch the fights and egghead programs on TV side by side, and they still enjoy square dancing together. John continues with his music, Joan with her choreography. Despite an IQ that is barely at the mean of the class, John is at the top 20% in scholastic achievement, and Joan is if anything doing even better. She sums up her present state in the last sentence of her autobiography, "I am healthy, happy, and wishing I could get out of this stuffy building into the sunny day." John would agree with the statement for himself too, although if he were saying it, his words might be more barbed.

## The Whites and High Morality

The White family consists of five members: Mrs. White, Mr. White, Donald, 17, Elaine, 13, and Herman, 7. The two older children are in our high Morality group.

Mrs. White's parents were divorced when she was two years of age, and although her mother later remarried, she always regretted the lack of a father during her childhood. She was determined that this situation should not occur in her own family. When her husband was in the Coast Guard during Donald's early years she set up a father image for emulation, and in a sense for worship. It is to this father image rather than to the real person that the children, and especially Donald, still respond. The family revolves about the father, but it is mother-dominated.

The White apartment is comfortable and pleasant, but not luxurious. The furnishings are simple; there are many books neatly shelved; a few of the latest magazines are on the coffee table; three good paintings are on the wall. Mrs. White is neatly-dressed, a rather angular woman, relaxed in social contexts, with firm convictions on many subjects. Mr. White is pleasant, responsive, and deferent to his wife's opinions in most matters.

Donald is preoccupied with the problems of religion and morality to the exclusion of almost everything else. His chief ambition is to spread the word of God and serve Him on earth. He writes in his autobiography:

> I remember how I once stood before the mirror and said, "Who are you? What are you doing here?" This question remained on my mind until a little

> less than a year ago. I now know who I am and exactly what I am supposed to be doing. . . . My religious experience is the most important thing that has ever happened to me. About two years ago I was confirmed a member of the Protestant Episcopal Church of America, but to me it was nothing special. I believed in God as a vague distant being who was impossible to reach. I wanted to get my kicks while I was alive and cross the bridge to eternity when I came to it. Fortunately, events and circumstances followed one after another until I realized the full significance of my discovery. Within the space of a few months I realized what I was and where I was going. I realised that I was standing on a crossroad, one leading off to eternity, the other plunging over a cliff into the bottomless sea. I knew which way I would go.

Here he describes in explicit and eloquent terms what may be considered the crucial problem of adolescence: the establishment of an Ego identity. As Erikson puts it, "The growing and developing youths faced with this physiological revolution within them, are now primarily concerned with what they appear to be in the eyes of others as compared with what they feel they are, and with the question of how to connect the roles and skills cultivated earlier with the occupational prototypes of the day. In their search for a new sense of continuity and sameness, adolescents have to refight many of the battles of earlier years, even though to do so they must artificially appoint perfectly well-meaning people to play the role of enemies; and they are ever ready to install lasting idols and ideals as guardians of a final identity . . . The sense of ego identity, then, is the accrued confidence that the inner sameness and continuity are matched by the sameness and continuity of one's meaning for others, as evidenced in the tangible promise of a 'career'." (Erikson, 1950, p. 228)

The career and indeed life that Donald has chosen is the priesthood of the Anglican Church. His mother has some doubts about this choice. On the one hand, she feels he has the personal characteristics to do well in the priesthood, but on the other, she does not have her son's preoccupation with religion. She says, "He wants to go into the ministry as an Episcopal priest, and as I know him today, I'd say it's the only thing for him to do. He'd make a very good priest. He's always been understanding in a grown-up sort of way--remarkably so--this was true of him in the early grades . . . I worry a bit about the responsibility. I don't disapprove of it, but I'd be just as happy if he settled for something else. (Why?) We'd never enjoy or be happy in this job ourselves, so I don't know if one could get satisfaction out of it."

Donald may look grown-up and understanding to his mother, but he is also a somewhat anxious boy who feels that he is at the mercy of a threatening environment. He writes in his autobiography, "The first school I went to was a nursery school in the Baptist Church when I was five. It was a nice place, but sometimes I felt as though I didn't quite belong, a feeling that has remained with me until not long ago. I went to public school for the first grade and had a very bad time indeed. The teachers were all sterotypes who refused to recognize out-of-the-ordinary imaginations. My imagination was throttled so that it has never come out since. I came to the Lab School at seven years and have remained here since. I always liked history, and I liked art before unimaginative teachers and students discouraged me."

The hostility illustrated in these comments about teachers and fellow-students pervades (directly or indirectly) many of his protocols. Here for example are his responses to the Mischievous Dog fable:

Moralistic: Which would you rather do, Foolish Dog? Bite people or tinkle a foolish bell?

Humorous: Your bell rattles like our brains.

Sad: The younger generation is too easily prevented from killing things.

His stories to the Need:Achievement Test tend to deal with death and violence. He typically integrates his hostility with his knowledge of history, and in a sense removes the violence from the present and from himself. But there is no doubt about the agression underlying his fantasies. Here, for example, is his story to the picture-stimulus most often seen as a man returning from a business trip or a professional conference:

> The man is President Calvin Coolidge, shortly before he was shot by James Farley (?), a Roosevelt supporter. Coolidge was shot twice in the stomach and four times in the chest with a .44 caliber revolver, but recovered rapidly. No one in the country was informed and no arrests were made because the administration feared a proletarian revolution. The book in Calvin's hand is The Life and Death of Metternich.

The preoccupation with morality seems to be his defense against these hostile impulses, which threaten to overwhelm him. The standards approved and inculcated by his mother—"understanding in a grown-up sort of way"—served to inhibit childhood spontaneity and enjoyment of instinctual pleasure. He paid a price for this premature "growing up," and he is today angry with the world for denying him the pleasures he now rationalizes as "sins" that it is better not to have experienced, and that others should also not experience. The flood of instinctual impulses at the beginning of adolescence threatened to be his undoing. He overcame this by identifying himself with the ideal moral person, one who is "only the servant of God." He had been left out as a child—recall his account of nursery school—but now he would be at one with all. As he says on the direct Sentence Completion Test: From past experience, I think the worst thing about myself is - "the same as everyone else, my natural sinfulness." But he is also better than everyone, for he now knows "which way to go."

Solving the identity problem with the priesthood has certain disadvantages during adolescence. The moralizing he does in most situations does not always go over with his peers, and he himself realizes that he is not well accepted by others, despite the common bond of sinfulness. On the direct Sentence Completion Test, he reports that others see him as: "a radical moralist," "a big clumsy goof," "a bigot." On the indirect form, he says others see him as: "very impulsive," "a fool," "immature," "a fanatic."

These perceptions are in large measure accurate. His teachers liked him much better before he found "the way to go." In his earlier years, his teachers describe him as a hard worker, and eager to do well; he was rated high in studiousness, and above average in resourcefulness and consideration. Now they rate him low in their preference for having him in class, low in peer relations, and only average in love of learning, this rating despite his high achievement scores. He is in the top 20% of his class on both numerical and verbal achievement, although his IQ of 134 is only at the class median.

"Morality" is Donald's salient characteristic for his peers, and he received seven votes for Character on the Outstanding Traits Test. This does not, of course, mean that they like him. As he says in his autobiography, he has no real friends and only three "close associates." He describes these as follows: "None are by any means perfect, but they all have qualities of goodness and unselfishness that rub me the right way."

The mother does not see her son as others see him, and she would be very surprised indeed if she were told that his classmates considered him "a big clumsy goof." On the contrary, she is proud of him because she feels that he has met the standards she has set. In the interview she listed the traits she would like to see in her son's friends as "reliability," "intelligence," "good manners," and "good disposition." She added that Donald possesses these traits himself. When asked, "What things does Donald do nowadays that make you proud of him?", she says, "Serving on the Student Council, dragging boys to church and making them like it, reading evensong at Church during Lent, his College Board scores and the papers he writes, good manners, and his general behavior." Her aspirations for his future development include more of the same, but there are also uneasy undertones that she feels some present deficiencies in him. When asked, "What do you want Donald to be like as an adult?", she says, "About the way he is now with a little more maturity, very interesting, wonderful person—lot of humor, understanding of people, interesting to talk to—high standards for himself, tolerant and bright. Deeply religious, although he doesn't talk about it much. Listens to people, and he is fun to have around."

To insure that her children do make her proud, she has kept close watch on them. She believes this is the proper way to rear children. When asked, "Thinking now about children in general today, do you feel they are receiving as much control from their parents as they should?", she replies, "No, they're neglected children. Their parents ought to be more interested in them." (Why do you say that?) "They do not take enough pains to find out what their children are up to—boys have left home, gotten in trouble with the police. And their parents when told about it have said but what am I to do." She feels that hers is the better way, and that she has been liberal enough with her children. She comments about herself, "I'm a very relaxed mother really, with minimum demands on the children. I try to allow my children every freedom to make their own decisions, to go their own way, and help them along to do it. I do this within the limits of safety, good reputation, and other things like that." Donald learned his lesson well, and he is now so completely identified with the moral person of "good reputation" idealized by his mother that she herself wonders occasionally what satisfactions he will derive from a life constructed on this model.

In many ways then Donald's underlying hostility to his parents and to the world is understandable. Also understandable is his fear of expressing these feelings directly. To do so would be to deny the ego identity he has adopted and to undo the image of the world in which he can move with "safety." His overt reactions to his family are consistently laudatory. In the autobiography, he describes his father in flattering terms, saying "my father is much more attached to his job than most people and spends more time at it." This, he implies, is the way of virtue. On the direct Sentence Completion Test, he answers all items relating to his family positively. He says, for example: My family - "are all good people"; Like most people I sometimes feel my family is - "foolish but not often." The portrait of his mother is also flattering: My mother - "is very understanding"; If my mother could change, I would want her to be - "I don't want her to change"; When they try to get me to be like my mother, I - "sometimes rebel, but my mother has very few undesirable traits." The portrait of the father is again complimentary: My father--"goes fishing with me in the summer"; If my father could change, I would want him to be--"what he wants to be"; When they try to get me to be like my father, I--"would be happy to oblige in almost all ways."

When, however, he responds to the indirect form of the test, the reactions to father, mother, and family are much less favorable. Now he says: The thing that Ken regrets most is--"that his family lacks understanding"; Like most people, Hal sometimes feels his family is--"a bunch of fools"; Above all, Joe wishes his familywere--"more virtuous"; If his mother could change, Bob would want her to be--"more understanding"; When they tried to get Dick to be like his father, he--"refuses."

This ambivalence toward his family and particularly toward his father, whom he has set up as a prototype of many virtues, especially in the work area, affects his image of his own competence. He is not really certain about his own adequacy in the face of responsibility. To be sure, he expresses some positive feelings toward work and responsibility on the direct Sentence Completion Test. For example: The reason I might give up trying is--"nothing"; When I think the odds are pretty much against me, I--"pray"; When told I have to do the whole thing by myself, I--"go ahead and do it." But he cannot maintain this optimistic image of his abilities, and he adds: When they asked me to be in charge, I--"generally refuse because they say power corrupts." Here his identification with morality helps him deal with his feelings of inadequacy by providing a rationalization for his weakness. To be strong corrupts, and his weakness is in a sense turned into a virtue. This fear of responsibility is reflected more sharply in his responses to the indirect form of the items: Most jobs with responsibility make Harold feel--"inadequate"; When told he will have to do the whole thing by himself, Harry--"was mad"; When Ed thinks the odds are pretty much against him, he--"doesn't do anything"; When Dan thinks the job is too much for him, he--"quits"; When George tries to do the lesson and can't, he--"blows his top."

Since he has confessed his "natural sin" and sees himself as highly moral, he can project the blame for his apparent inadequacies on the world, and his self-image remains quite positive. Indeed, he can be quite self-righteous. Others may see him as "immature," "a bigot" or "a fool," but he himself knows differently. Here, for example, are some relevant responses from both the direct and indirect Sentence Completion tests: From past experience, no matter what others might think, I myself know--"I am only a servant of God"; I often think of myself as--"the only Christian around"; Compared with other people, Bert feels himself to be--"very superior"; Jerry thinks he is best at--"teaching others"; From past experience, no matter what others think, Charles himself knows that he--"is usually right"; Ralph often thinks of himself as--"an important fellow." He can go right ahead functioning his own way with only minimum self-doubt or overt anxiety, for who is there to examine him? He himself is "the only Christian around."

His sister Elaine also has strong religious leanings and firm moral convictions. But they do not seem to have consumed all her other impulses. To the item "If I could have three wishes, I would choose--" she says, "Everlasting peace, complete Christianity, and a horse." Her brother had said only "World-wide Christianity."

Elaine had an easier time of it growing up. Not only was she a second child, but her father was at home during her formative years. She could compare her mother's image of him and the reality. She did not have to live up to an ideal, identify only with an unattainable abstraction.

Her IQ, like her brother's, is at the class average. Unlike her brother, however, she does not do outstanding work. Indeed, she has failed some courses. This is an area of deep concern for the mother, for her standards for the daughter are not lower than for the son. When asked, "Is there anything about Elaine's education at the Laboratory School that you are not satisfied with?", she says, "They let her get away without doing as good work as she could. She works hard only when she is interested. She is very bright and quick intellectually, and they answer she'll do it. We try and don't get anywhere. The school should take the responsibility." Her teachers consider Elaine an average girl, and rate her average in their preference for having her in class, average in peer relations, and average in love of learning. Her peers also consider her no better than average and give her only three scattered votes on the Outstanding Traits Test.

Despite this mediocre status in school, Elaine is more at ease with they world than is her brother. On the whole she believes others see her in a positive, or at least not negative, light. She reports on the direct Sentence Completion Test that others think of her as "liking to ride horses," "interesting," "nice," "shy." She says: From past experience, I know my teachers' opinion of me is--"good"; My family thinks I am--"wonderful." On the indirect form, she expresses some underlying anxiety, but it is not immoderate. Others see her as "bold," "spending money badly," "a shy little girl," "cold." She says, From past experience, Mary knows that her teacher's opinion of her is--"not very complimentary"; Norma feels her family thinks she is--"a baby."

Her image of herself is ambivalent. She does not have her brother's self-righteousness, and she cannot shift the blame for her own real or fancied inadequacies, as he is able to do, onto others. Where he says he is the "only Christian," she can only say that she is "different." The series of self-image items on the Sentence Completion Tests provides a rather nice portrait of her basic irresolution and her concern at once with spiritual "sin" and secular "looks." She says: Compared with other people, I feel myself to be--"nice"; From past experience, no matter what others think I myself know that I want--"my own opinion"; I often think of myself as--"different"; From past experience, I think the worst thing about myself is--"constant sin"; Compared with other people, Blanche feels herself to be--"very strange"; From past experience, Ruth thinks the worst thing about herself is--"her looks."

The statement that the worst thing about herself is "her looks" is no casual or accidental response. Child, mother, and teacher all take occasion to say something about this. When the mother is asked, What things does Elaine do nowadays that make you proud of her?", she says, "Doing a science paper which was a joy to look at and read, she can cook and serve a meal, *her looks in general*, whenever she gets in a social situation where another child needs reassuring she brings out their abilities. . ." Elaine's teachers would agree with Elaine rather than with her mother about the girl's looks. Her sixth grade teacher said, "The child does good work. Not prompt and very messy. She needs work on her personal cleanliness and femininity." To the observers, Elaine seemed a basically pretty girl, which is apparently what the mother sees; she is also a very sloppy girl, which is apparently what her teachers see. This sloppiness is so strikingly at odds with the family standards that one may venture to speculate whether it is not a form of rebellion which the daughter expresses and the mother refuses to recognize. It is interesting to note that neither here in the daughter's concern with her looks nor in her son's concern with his beliefs does the mother see her children as others see them.

The nature of Elaine's attitudes toward the family is illustrated by the discrepancy between her responses to the family items of the direct and indirect forms of the Sentence Completion Test--a discrepancy, however, which is by no means as sharp as her brother's. She much more than he expresses even on the direct form reservations about her parents. She says, in effect, she accepts them as they are, but she has no intention of identifying with them. Here are some typical responses: Like most people, I sometimes feel my family is--"unjust"; My mother--"loves me"; Above all, I wish my mother were--"just as she is"; When they try to get me to be like my mother, I--"rebel"; My father--"is wonderful"; Above all, I wish my father were--"just as he is"; When they try to get me to be like my father, I--"they don't."

On the indirect form, the portrait of the family and her relations to it is considerably less favorable. She now says: Betty's family--"quarrels a lot"; Like most people, Florence sometimes feels her family is--"too poor"; Carol's mother--"fights with Carol's father"; If her mother could change, Ellen would want her to be--"beautiful"; When they try to get Doris to be like her mother, she--"fights against it"; Carol's father--"is always going on trips"; Above all, Joan wishes her father were--"a fisherman"; When they try to get Doris to be like her father, she--"objects." Despite these assertions--or perhaps because of guilt engendered by them--she adds: From past experience, no matter what others might think, Charlotte herself knows that she--"loves her parents."

Elaine's plan for the future is to become a veterinarian. She gives this choice with great consistency and finality. Her mother likes the idea of a medical career for her daughter, but not veterinary medicine. When asked, "What is your opinion of the career Elaine has expressed an interest in?", she answers, "If she wanted to, she could do anything she wanted to do--whatever it is, will be done with vigor and vitality. She may outgrow the vet idea as she gets over the period of horses. She has talent for medicine and the personality and physical vigor that could handle this. She has a good memory and a quick brain and can learn it. If she went into something like physical education which she also likes she'd be settling for too little."

Elaine agrees with her mother's opinion that she can do anything, and that she is not afraid of work or responsibility. She says on the direct Sentence Completion Test: When they asked me to be in charge, I--"went in charge"; Most jobs with responsibility make me feel--"responsible"; When told that I would have to do the whole thing by myself, I--"do it." There is no discrepancy here between her reactions to the direct and indirect forms of the stimulus. She similarly says on the indirect test: When they asked Ann to be in charge, she--"gathered up the whole project"; Most jobs with responsibility make Mildred feel--"powerful"; When told she will have to do the whole thing by herself, Harriet--"went on and did it."

She does, however, have some serious doubts that hard work and achievement carry with them their own reward, or even reward from others--an attitude that may account for her haphazard efforts in school. It is not that she could not achieve if she tried, but is it worth trying? This attitude is reflected in her reactions to the Need:Achievement Test. Here, for example, are two of her stories:

Story 1: Bob is doing his homework and has finally answered a question that stumped him. Bob is very proud of himself for solving the problem. Now Bob can go to school and he is the only one with the answer. Next day Bob went into the class with the hard question, and several of the boys looked happy. The teacher asked the answer and every hand went up. Boy! was Bob ever surprised.

Story 6: This poor newspaper editor is getting out tomorrow's issue. Tomorrow we will pick up the paper and never think about all the work of an already overworked man, that went into it. Good luck!

If school achievement, peer group saliency, and family status are the criteria, Elaine is not functioning as well as Donald. He receives better grades, has more saliency for his classmates, and is certainly more respected by his mother. However, if resilience and freedom from anxiety are the criteria, then Elaine seems to be the more fortunate one. Donald pushes himself in a compulsive effort to live up to his mother's expectations for him. Since he cannot reach the unattainable, i.e., the idealized and abstract father-image his mother has constructed for him, he is anxious about his abilities and uncertain about his ultimate adequacy as a person. Elaine refuses to take up her mother's challenge, and she never had to identify herself with the idealized and abstract father-image--father was home in the flesh, vices as well as virtues. Although her work suffers in comparison with her brother, she is less anxious about her abilities and more certain of her ultimate adequacy as a person. She aspires to less but may perhaps achieve more. Where Donald seeks his own salvation by curing the sins of men, Elaine seeks only to cure the diseases of animals. She looks to the future with courage, if not indeed optimism, for she is convinced she can do what she sets out to do if she tries.

## The Morgans - and High Psychological Adjustment

The Morgan home is a tribute to Mrs. Morgan's good taste and Mr. Morgan's earning power. The large beautifully furnished apartment is located in a fine residential area. The living room is extraordinarily neat with a few books on the shelves and no magazines in evidence. The dominant piece of furniture is a concert-size grand piano, which all the Morgan girls play. But despite its frequent use, no music is left carelessly scattered on the music stand.

Mrs. Morgan is a plump, pleasant, and pleasant-looking woman, immersed in her home and her family, with no outside interests. She was genuinely puzzled by the question, "If you hadn't had any children, what are are some of the things you might have done?", and finally replied, "I really don't know what interests there would be besides that. No interests that I can think of--I really haven't ever thought about it." She means this, for her children, Barbara 16, July 12, and Ann 10, have been the satisfactory center of her life, and the family has been close and congenial. Barbara, who is in our psychological adjustment group, agrees with her mother. There is no mention of family tension or ill-feeling in any of her protocols.

Togetherness (in no derogative sense) is the family theme and was the theme of Mrs. Morgan's own family of origin. She says,

> I came from a very close home with very strong attachments. They still are. We all took music and language lessons. All seven of us had college education. My children are the same in their attachment to the home--it is part of them. I have never hampered them in any way. I try to make them see my point of view, but there is no force put on it. We never go on vacations without them. When we celebrate birthdays or anniversaries, it is usually just our little family together.

Mr. Morgan is a successful civil engineer on frequent call away from home, and although he makes special efforts to be with the children as much as he can, he has not been as active a participant in the family group as the mother might wish. In reply to the question, "Who was the most effective disciplinarian when Barbara was a child?", she says, "Well, he was away so much he just handed it over to me saying 'she'll do what you say'. They have missed something because their father was rushing in and out and being here so infrequently. . . Sometimes he thinks I'm too free with them about the rules, yet it hasn't done them any harm as far as I can see. I've really just done what I thought best and never looked to any authorities for advice--I never took any of that very seriously."

The portrait that Barbara gives of the family is entirely favorable. She writes in her autobiography, "I hope that I will be as understanding, helpful, and loving as my parents are to me." On the direct Sentence Completion Test she says simply: Like most people, I sometimes think my family is--"the best." She is fond of her parents, and although she refuses to identify with them completely, the only criticism she has of their behavior is that they do not think of themselves enough. Here, for example, are responses to the family items of the direct Sentence Completion Test: My mother--"is wonderful"; Above all, I wish my mother were--"always as she is now"; My father--"is the best father anyone could have"; Above all, I wish my father were--"able to have more free time" (it is noteworthy that even in this implied criticism she does not put the blame on the father--she wishes he were able to have more time with her); When they try to get me to be like my mother, I--"wonder why?"; When they try to get me to be like my father, I--"still do as I want." Her responses to the indirect form of the Sentence Completions are in a similar vein: Carol's mother--"is very nice"; Above all, Jean wishes her mother were--"always as she is now"; If her mother could change, Ellen would want her to be--"a person who doesn't think so much of her children and thinks of herself once in a while."

Barbara is certain that this high regard she has for her family is reciprocated by them. As she says both on the direct and indirect forms of the Sentence Completion Test: I feel my family thinks I am--"clever", Norma feels her family thinks she is--"dependable." And she is of course right. Her family hold her in very high regard indeed. Her mother feels that the most important qualities a person can have are sincerity, wholesomeness, and enjoyment of life. As she says, "You have to learn to accept things and go along. Sometimes I think the most important thing is to instill a good happy outlook on life." She believes her daughter possesses these qualities--sincerity, wholesomeness, and the ability to accept things and go along. When asked, "What do you want Barbara to be like as an adult?", she replies, "If she keeps the same characteristics she has now, it will be fine--sincerity and wholesomeness. She is very close to home and very warm as far as home is concerned. She appreciates her home."

The mother seems to have helped her daughter develop these qualities without any apparent pressure on the girl to behave in any particular way. The mother reveals her own ideals, her permissiveness, and her complete confidence in her daughter when she is asked about the characteristics she would like to see in Barbara's friends. She says, "She seems to pick the type of friends who are sincere like she is. They are very wholesome. I don't think she keeps up with anyone who falls too far short of this. But no one is a perfect person. It's all right."

Perhaps because her parents think so well of her and she has internalized their evaluation of her (surely one possible reason), Barbara has developed a very positive self-image. This image is reinforced by the high opinion of others since she is indeed a pretty, charming, and comptent young lady. Although her IQ is 120, well below the class median, she receives good--albeit not outstanding--grades. She is well liked by teachers and peers. Her teachers rate her above average in their preference for having her in class, above average in peer relations, and above average in love of learning. Her peers give her five votes on the Outstanding Traits Test, three of them in emotional stability.

Barbara entered the school in her junior year because of the academic challenge it provided. She describes this move in her autobiography as follows: "When I had finished my sophomore year I decided that I didn't feel I was getting as much out of High School as I could be. I felt that even though I was receiving excellent grades I wasn't learning very much because there lacked one thing--a challenge for me to do my best. I left public school and began attending U-High where I found it was much superior to public school." The teacher who interviewed her at the time of transfer recorded this comment: "The parents want the girl to have a well rounded education and she has been an excellent student at her former school. She is very poised and charming, and I think she would be an excellent addition to the school and make a very good adjustment here." The prediction was born out. At the end of her Junior year she was a B/ student, and her home room teacher said of her, "She has done well in all areas--a mature, dependable, and socially sensitive young lady."

The mother is pleased that the girl has adjusted to school so well, and perhaps a trifle surprised too. She points out that transferring schools was Barbara's idea, not hers. She says, "She decided she wanted to go to Lab school because she wasn't getting enough challenge at public school. She left her friends to go, and she has been very happy there. Maybe she is "too well adjusted to school." But despite this apparent qualification, the mother shares her daughter's enthusiasm for school and has always helped her with the school work. She explains, "I used to sit down with her and go over what she had learned. She was proud to show off what she was doing. I was a former school teacher and I tried to be careful. I was afraid I would go against what they were doing in school. Now we talk about her work and what she is doing and what they were doing at school." (Who initiates conversation?) "Both. The subject comes up freely, at any time, there's no set time for talking things over."

Barbara knows others think well of her. On the direct form of the Sentence Completion Test, she says others see her as: "good," "happy," "sweet," "smart," "helpful." As for teachers: From past experience, Mary knows that her teachers' opinion of her is--"very good." She thinks of herself also in consistently positive terms. On the direct Sentence Completion test she says: Compared with other people, I feel myself to be--"equal"; From past experience, no matter what others might think, I myself know--"I can usually be right"; I often think of myself as--"brilliant." This is not to say that she is not aware of some faults. She feels some anxiety about her temper. She says: From past experience, I think the worst thing about myself is--"my temper"; I feel happiest when--"everything goes smoothly." But this is only a temporary qualm, and she responds to the stem "If I could begin all over again, I. . ." with "would do the same thing."

It will be recalled from her autobiography that she feels work should be challenging. Indeed, she changed schools for this reason. The same attitude is reflected in her responses to the Need:Achievement Test. Here, for example, is her first story:

> A College boy has been searching for a long time for an answer to one of his math problems. If he had not found the answer it would have meant a low grade for the quarter, but since he has now found the answer he will submit it to the

> teacher. If she finds it satisfactory his grade will be raised. Another reason why finding this answer was so important was that it was a challenge to him and now that he has found it, it has proved very self-satisfying.

Work--doing what is required--is extrinsically and intrinsically rewarding, and she feels that she has the ability to do what is necessary. She states on the direct form of the Sentence Completion Test: Most jobs with responsibility make me feel--"dependable"; When told I have to do the whole thing myself, I--"feel elated." By and large, the indirect form of the test echoes these responses, although there is an occasional hint that she is sometimes tired of being so dependable. As she says: Most jobs with responsibility make Mildred feel--"loaded down with work."

As we have already observed, Barbara's confidence in her capabilities derives at least partially from the unqualified acceptance she finds at home. Although she does not need to prove herself and is not driven by rivalry, she is not averse to competing with others. It is required and it is a challenge. Indeed, competitiveness is a mode of adjustment in a society that is competitive. She says on the indirect form of the Sentence Completion Test: When Ruth sees others doing better than she is, she--"tries harder"; Working with others all the time makes Barbara--"try harder." These attitudes appear only on the indirect form, and are not found on the more consciously-expressed responses to the direct form. They do not seem to be serious, and surely do not affect her social relationships. She feels that people like her and that she likes them. As she says: From past experience, Martha feels most people are--"kind."

This confidence in her abilities allows Barbara to look to the future with repose and optimism. She has not yet decided what she will do but has narrowed the choices to journalism, teaching, and law. Whatever career line she selects, she makes clear that she wants marriage along with it. As she puts it in her autobiography, "I hope that after graduation I am accepted to the University of California and can major in journalism or law. I may even like to do something in science. As you can see I am quite indefinite as to what profession I would like to take up. I also hope to get married and raise a family as most girls want to do."

Her mother approves of these plans. She says, "I think she is going along the right line. I have enough confidence in her to let her do what she wants to do. Of course she depends a lot on family opinion too. But I certainly wouldn't choose it for her unless she asked me."

With this characteristic vote of confidence from the family, Barbara looks about her without fear or malice. The world is a pleasant place, and she is a well-functioning and well-meaning young lady. She believes that people are essentially kind, and indeed they are kind to her. She believes that she herself is kind too--and capable besides. Her teachers, classmates, and family agree with her self-appraisal. There is nothing to worry about.

## Appendix A

## INSTRUMENTS USED TO IDENTIFY EXPERIMENTAL GROUPS

All of the instruments used in identifying the experimental groups were described in Chapter 2. Only those designed especially for this study are reproduced here. In the case of tests having separate forms for boys and for girls (e.g., Descriptive Words) a combined form containing the alternative wording for both sexes is presented here. The complete list of tests used in the identification of the experimental groups follows:

Creativity

1. Word Association Test
2. Uses for Things
3. Hidden Shapes (Not reproduced here. See Chapter 2)
4. Fables
5. Make Up Problems

Intelligence

1. Stanford-Binet Intelligence Test, 1937 Revision (Not reproduced here. See Chapter 2)

Morality

1. Do You Agree?
2. Personal Opinion Questionnaire
3. Descriptive Words (Separate forms for boys and for girls)

Psychological Adjustment

1. California Test of Personality (Not reproduced here. See Chapter 2)
2. Indirect Sentence Completion Test (GJG Verbal Thinking Speed Test). (Separate forms for boys and for girls)
3. Direct Sentence Completion Test (GJG Test of Behavior)
4. Do You Sometimes?

Name ______________________________ Grade __________ Date __________

## WORD ASSOCIATION

Listed below are twenty-five words that have more than one meaning. In the space following each word, you should write down as many of the meanings as you can. The meanings need not be written out in full; writing down one word will usually do. For example:

BARK tree, dog, seal, boat

These four words bring to mind three different meanings for the word BARK: The outer covering of a tree; a certain noise made by some animals like dogs and seals; and a kind of boat. Notice that the meanings were not written out in full; only some words to remind us of these meanings were given. This is all you have to do.

Your score will depend both on the number of different words you write (in this example above this was four) and on the number of different meanings the words remind us of (in the example above this was three). So if you had time to write only two words for BARK, you would chose tree and dog, say, rather than dog and seal because the former words stand for two meanings but the latter words stand for one meaning.

When you are sure of what you are to do, you may begin.

1. ARM ______________________________

2. BIT ______________________________

3. BOLT ______________________________

4. CAP ______________________________

5. COIL ______________________________

6. DUCK ______________________________

7. FAIR
8. FAST
9. FILE
10. GRAVE
11. HOST
12. LEAF
13. MORTAR
14. PINK
15. PITCH
16. PLANE
17. POKE
18. POLICY
19. PORT

20. PUNCH

21. RAKE

22. SACK

23. STRAND

24. TACK

25. TENDER

## USES FOR THINGS

Listed below are five objects. Your task is to write down as many different uses as you can for each object. Several examples are given in each case. You will have 15 minutes altogether. Be sure to write down some uses for each object. Write down anything that comes to mind, no matter how strange it may seem.

Name________________________ Grade______ Date____________

1. BRICKS Build houses, doorstop,

2. PENCILS Write, bookmark,

3. PAPER CLIPS Clip paper together, make a necklace

4. TOOTHPICKS Clean teeth, test cake,

5. SHEET OF PAPER Write on, make an airplane

Name ______________________ Grade ______ Date ____________

## FABLES

On the following pages you will find four short fables whose endings are missing. Your task is to make up three different possible endings for each story. One of the endings should be moralistic, that is, an ending which teaches a lesson about right and wrong conduct. The second ending should be humorous, that is, amusing or comical; and the third ending should be sad, that is, sorrowful or depressing. In making up the three endings try to imagine what the original author would have said, and write that.

### Example

A grasshopper, that had merrily sung all the summer, was almost perishing with hunger in the winter, so she went to see some ants that lived near, and asked them to lend her a little of the food they had put by.

"You shall certainly be paid before this time of year comes again," said she.

"What did you do all the summer?" asked they.

"Why, all day long, and all night long too, I sang, if you please," answered the grasshopper.

"Oh, you sang, did you?" said the ants,

Moralistic: "Well, he who will not work shall not eat."

Humorous: "Now then, you can dance."

Sad: "Well, you'll just have to starve now."

Notice in the example that the moralistic ending has to do with whether or not it is right for a person to expect to live at someone else's expense without having worked himself. The humorous ending teaches no lesson but makes a play on the words "sing" and "dance", while the sad ending points to the unhappy outcome of the grasshopper's lack of foresight and planning.

Reread the example again, and when you are more sure of what you are to do, go on to the four stories below.

## 1. The Mischievous Dog

A rascally dog used to run quietly to the heels of every passer-by, and bite them without warning. So his master was obliged to tie a bell around the cur's neck that he might give notice wherever he went. This the dog thought very fine indeed, and he went about tinkling it in pride all over town.

But an old hound said,

Moralistic: ______________________________

______________________________

Humorous: ______________________________

______________________________

Sad: ______________________________

______________________________

## 2. The Peacock and the Eagle

The peacock, spreading his gorgeous tail, stalked up and down in his most stately manner before an eagle, and ridiculed him for the plainness of his plumage.

"I am robed like a king," said he, "in gold and purple and all the colors of the rainbow, while just look at your plain coat!"

"Tut, tut!" said the eagle,

Moralistic: ______________________________

______________________________

Humorous: ______________________________

______________________________

Sad: ______________________________

______________________________

### 3. The Sensible Donkey

A soldier, in time of war, was allowing his donkey to feed in a meadow, when he was alarmed by a sudden advance of the enemy. He tried every means in his power to urge the donkey to fly, but in vain.

"The enemy are upon us," said he.
"And what will the enemy do?" asked the donkey. "Will they put two pairs of baskets on my back, instead of one as you do?"
"No," answered the soldier, "there is no fear of that."
"Why then," replied the donkey,

Moralistic: ____________________________________________

____________________________________________________

Humorous: ______________________________________________

____________________________________________________

Sad: __________________________________________________

____________________________________________________

### 4. The Foolish Donkey

A man drove his donkey to the sea-side, and having purchased there a load of salt, proceeded on his way home. In crossing a stream the donkey stumbled and fell. It was some time before he regained his feet, and by that time the salt had all melted away, and he was delighted to find that he had lost all his burden.

A little while after that the donkey, when laded with sponges, had occasion to cross the same stream. Remembering his former good luck, he stumbled this time on purpose.

Moralistic: ____________________________________________

____________________________________________________

Humorous: ______________________________________________

____________________________________________________

Sad: __________________________________________________

____________________________________________________

Name____________________________________Grade____________Date____________________

## MAKE-UP PROBLEMS

DIRECTIONS: Inside the booklet you will find a series of arithmetic problems. These problems are different from the ones that you are accustomed to doing because they contain more information than you need to get a single answer. In fact, the object of the test is to see how many different problems you can think of which might be solved with the information you are given. For example, you might be given the following material:

> John makes extra money in the spring and summer mowing lawns for people in his neighborhood. Sometimes he has more lawns to mow than he can handle. At such times he usually gets help from his two younger brothers, Fred and Tom. Fred can average half as much work as John in the same time, and Tom can average a third as much as John. John is paid by the job, and the people who hire him do not mind how many others help so long as John pays them out of his earnings and sees that the job is done right. Mrs. Jones pays John $9.00 a week to mow her lawn from the end of May until the middle of September, and John finds that he and his brothers can do the job in an hour and a half. Other neighbors pay John at the same rate as Mrs. Jones. Given this information, set up as many problems as you can involving John's working experience in the spring and summer, and those of his brothers.

In the space provided at the end of the paragraph, you might write any of the following problems, all of which might actually be worked knowing the information given. DO NOT WRITE DOWN ANY PROBLEMS WHICH COULD NOT BE WORKED WITHOUT ADDITIONAL INFORMATION.

1. What is a fair rate of pay for Fred and Tom?
2. How many lawns could the boys care for in an eight hour day?
3. If the boys work 10 hours every Saturday, how much money would they earn from May to September?
4. How much faster does Fred work than Tom?

And so on. Note that you would not ask a question such as, "How much money should John get for contacting neighbors and arranging to cut their lawns?" since this could not be answered from the information given.

You should give as many problems as you can for each paragraph of information. Try to give some problems for every paragraph rather than spending most of your time on just one or two paragraphs.

1. Mr. Smith decided to purchase a house whose cost was $15,000. He made a down payment of $5,000, and agreed to pay the rest with monthly payments. Each monthly payment included a portion of the principal, an interest charge computed at the rate of 5 per cent per year, plus a charge for insurance which cost $129.50 per year. Mr. Smith found by talking to the former owner that it cost an average of $20 per month to heat the house. After he had owned the house for two years, he received $3000 through an uncle's will which he applied to what he still owed on the house. A year later he purchased a new stove and refrigerator on time payments which added $35 a month to his expenses. At the same time he added insulation to the house which cost him an additional $30 a month for 18 months, but which the contractor who installed it guaranteed would reduce his heating costs by 15 per cent. Given this information, set up as many problems as you can involving Mr. Smith's expenses in connection with the purchase and operation of his home.

2. The Park District of New City installs a swimming pool with a total capacity of 20,000 cubic feet. To fill the pool, two inlets with a potential of 20 and 10 cubic feet per minute respectively are available. A single drain at the deep end of the pool will remove water at the rate of 25 cubic feet per minute. A circulating pump is provided which moves the water in the pool through a filtration system at the rate of 5 cubic feet per minute. When the filters become clogged and require cleaning, the pool attendant is instructed to open the drain half way and then to open the larger inlet valve just enough so that the level of water in the pool remains constant. When the pool is to be cleaned, as it is once every week, the water is drained and the sides of the pool scrubbed. The draining and scrubbing together require 10 hours. Given this information, set up as many problems as you can concerning the operation of the pool.

3. Jack and Phil are writing a paper for their science class about falling bodies. They conduct some experiments by throwing rocks from a cliff to see how far they will fall in a certain time. When the rocks are dropped straight down they obtain the following rate:

| Distance the Rock Falls | Time Required to Fall this Distance |
|---|---|
| 4 feet | 1/2 second |
| 16 feet | 1 second |
| 64 feet | 2 seconds |
| 144 feet | 3 seconds |

They notice that when they throw the rocks straight out on a level the rocks fall just as fast and hit the ground in the same total time, 4.5 seconds, as when they were simply dropped. When they throw the rocks into the air just high enough to go over the top of a certain tree standing at the edge of the cliff, it takes 9.5 seconds for the rock to fall to the bottom of the cliff. Given this information, set up as many problems as you can about Jack and Phil's experiment.

4. Mark and George are making a survey for a problem in their social science class. They want to find out how much money people who live in the neighborhood right around the school pay for rent. They decide to ask everyone who lives in the eight blocks surrounding the school how much they pay. Mark goes to all of the houses in four of the blocks and George to all the houses in the other four blocks. Of the 40 houses that Mark visits he gets answers from only 22 tenants; 14 tenants being away from home and 4 refusing to answer Mark's questions. George visits 34 houses, getting answers from 18 tenants. Three tenants refuse to answer George's questions and 13 are not at home. Mark finds that the average rent paid by his 22 tenants is $85 per month, with the highest being $135 and the lowest $47.50. George finds the average is $97.50 with the highest being $155 and lowest $75.00.

Since all of Mark's tenants live in apartment buildings managed by real estate companies, he calls the companies and finds out from them that the real average rent for all 40 apartments in his four blocks is $90.00 per month. Given this information, set up as many problems as you can about Mark and George's survey.

## DO YOU AGREE?

Below are listed a number of situations in which a young person is faced with a choice. In each case, you are to imagine that this individual turns to you and asks you for advice. Following each situation are several different courses of action. You are to indicate, by checking the appropriate box on the answer sheet, which course of action you would advise the person faced with the choice to take. Which would be best for him under the circumstances? You will have to use your imagination, since it will be apparent that in some cases you could not be physically present to advise the person at the time when he had to make his choice. In addition, there will probably be situations in which you will think of a course of action which is not among those listed after the situation, which will seem to you better than any of those listed. Nonetheless, you are to indicate which of the four alternatives listed you think would be best for the individual under the circumstances.

This test was given to five hundred students in various Chicago and suburban high schools. Their answers are summarized below in the following manner: before each alternative course of action is listed the number of students, out of the five hundred, who said that they would advise the individual to follow this course. We would like to know the degree to which the students in the Laboratory School agree with these typical American High School students.

This is a sample question.

A. Bob knows that next week he will have important tests in both arithmetic and science. He likes science better, and he is more anxious to get a good mark in it than in arithmetic, although he wants to do well in both. He also thinks that he knows more about science than arithmetic. He knows that he does not have enough time to do a really good job of stying for both tests. What would you advise Bob to do?

a. (229 of the 500 students chose this alternative) Divide his studying time equally between both subjects, because both are important.

b. (147 chose this) Spend a great deal of time on arithmetic, and a little time on science, because he probably knows more about science to begin with.

c. (103 chose this) Spend a great deal of time on science, and a little time on arithmetic, since science is more important to him.

d. (21 chose this) Ask his teachers to postpone one of the tests, because he cannot study adequately for both.

In the sample question above, if you agreed with the 229 students who advised Bob to divide his studying time equally, you would place a check mark under the letter "a" on your answer sheet, in the space for the sample question. If you agreed with the 147 who thought he should spend a great deal of time on arthmetic, and a little time on science, you would place a mark under "b", and so forth. DO NOT MAKE ANY MARKS ON THE TEST BOOKLET.

1) Sidney has applied for admission to ten of the best universities in the United States, as a premedical student. He has been refused admission to each of these schools, because he lacks certain mathematical courses in his high school program. What would you advise Sidney to do?

a. (142 of the 500 students chose this alternative) Apply to other universities which do not have this requirement, even though their premedical program may not be as good.

b. (307 chose this) Go to an evening or summer high school program, and pick up these math credits, and then reapply to the same institutions.

c. (30 chose this) Take a course other than premedical at a small college, and try to transfer after a year or so to a premedical course in one of the ten universities.

d. (21 chose this) Study math on his own, and then apply again to the ten universities, asking to take a special exam over the math courses.

2) Ned is a very popular student at the Park School, where he has one more year to go before graduation. He gets very good marks and all of the teachers seem to like him. Recently his father has been transferred to a job in another city and the family has to move. Ned is given the choice of staying at the Park School and living with an aunt whom he likes very much, or moving with his parents and enrolling in a new school. What would you advise Ned to do?

a. (14 chose this) He should go with his family because it is not good for a child to be separated from his parents unless he has to be.

b. (273 chose this) He should go with his family since he will probably be just as popular and just as happy in the new school.

c. (103 those this) He should stay with his aunt because it's good for a child to be separated from his parents for a while.

d. (110 chose this) He should stay with his aunt since it is hardly worth while changing to a new school for just one year.

3) Joe, a high school student, sometimes stays out with the gang until late at night. One night after he came in late, his father warned him that he wouldn't be able to go out at night for a month if he came in once more after eleven o'clock. A few nights later, Joe was out with his friends again, and because of a flat tire on a friend's car, he did not get in until 11:15. The next morning his father asked him what time he came in. Joe knew that his parents always went to bed at 10:30, so that they didn't know that he came in late. What would you advise Joe to do?

a. (104 chose this) Tell him that he got in at 11:00, since he was only fifteen minutes late, and it really wasn't his fault.

b. (306 chose this) Tell him that he got in at 11:15, because his father probably wouldn't punish him, since it wasn't his fault.

c. (8 chose this) Tell him that he got in a few minutes before eleven, because if he said he got in at eleven exactly, his father might become suspicious.

d. (82 chose this) Tell him that he got in at 11:15, because any other answer would not be true.

4) Fred was ill much of the time as a young child, and consequently is not as good at sports as some of the boys in his high school. He loves sports, however, and goes out for baseball as a sophomore. After a few practice sessions, the coach tells him that he is not good enough to make the team, even as a substitute. What would you advise Fred to do?

a. (117 chose this) Work by himself at improving his baseball ability until he is good enough to make the team.

b. (243 chose this) Ask the coach if he may continue to work out with the team, even though not a member, and try to increase his ability at baseball until he is good enough.

c. (66 chose this) Go out for a different sport, such as track, even though he will probably not be very good at this either.

d. (74 chose this) Give up trying to be an athlete, and try to become good at non-athletic games.

5) Mary has a date with Harry for a Saturday night movie. She really doesn't like Harry too well, because he is not well-known or well-liked by most of the boys and girls in her group, but she accepted the date because she didn't feel like staying home on Saturday night. On Thursday of that week, Bob, a boy whom she likes very much, calls. He is home from the Navy for the weekend, and he wants a date with her for Saturday night, because he has to go back Sunday. What would you advise Mary to do?

a. (29 chose this) Give Harry some excuse and go out with Bob, because you shouldn't go out with a person you don't know very well, if you have a choice.

b. (4 chose this) Go out with Harry, because it wouldn't be fair to him to break a date.

c. (317 chose this) Go out with Bob, and make up an excuse for Harry, because Harry can go out with her any weekend, but Bob is in the service, and has few chances for dates.

d. (150 chose this) Go out with Harry, because Bob should have let her know sooner that he was going to be in town.

6) George has a very good friend Bill, of whom his mother disapproves. Bill is planning a party for Saturday night, and he wants George to attend. Many of George's other friends will be there, and he thinks it will be a wonderful party. His mother knows there is going to be a party, but thinks that it will be at Andy's house rather than at Bill's house. What would you advise George to do?

a. (18 chose this) Tell his mother that the party was at Bill's house, and hope that she would let him go anyway.

b. (247 chose this) Let his mother go on thinking that the party was at Andy's, since she would probably only worry if she knew it was at Bill's.

c. (73 chose this) Tell his mother that the party was at Bill's house, because she'd be sure to find it out sooner or later anyway.

d. (162 chose this) Let his mother go on thinking the party was at Andy's, since if he told her it was at Bill's, it would only create a family quarrel.

7) Barbara has just graduated from high school and has a choice of two summer jobs. She plans to enter a nursing school in the fall. During the summer she can either work as an attendant in a hospital where the work is hard and the pay low, or she can work as an assistant to a newspaper reporter where the work is exciting and the pay is fairly high. What would you advise Barbara to do?

a. (63 chose this) She should work in the hospital since if she takes the other job she might become dissatisfied with nursing.

b. (177 chose this) She should work in the newspaper office since this will enable her to save more money for the Fall.

c. (204 chose this) She should work in the hospital since this will help her to become better prepared for her nursing studies in the Fall.

d. (56 chose this) She should work in the newspaper office since she might find out that she doesn't really want to go into nursing after all.

8) Jerry is a star player on the school basketball team. The school has a very important game coming up, and obviously needs Jerry to have any chance of winning. Jerry, however, has been receiving very poor marks in History, and his teacher has said that he won't be able to play unless he gets a high mark on a special test which the teacher makes up for him. Jerry stays that night after school to take the test, and while he is taking it, the teacher is called to the office for an important telephone call. While the teacher is gone, Jerry is tempted to look up a few dates in his history book, since he is afraid he can't pass the test and play in the important game without this help. What would you advise Jerry to do?

a. (59 chose this) Refrain from looking up the answers, even if he had to fail the test, since the situation does not justify cheating.

b. (136 chose this) Look up the answers, and take a chance on getting caught, because the school is depending on him to play in the game.

c. (163 chose this) Look up the answers so that he could pass the test and play the game, but confess that he had cheated after the game was over.

d. (142 chose this) Refrain from looking up the answers, because the teacher might come back into the room suddenly and catch him.

9) A watch has been stolen at school. John finds out by accident that his friend, Dick, has taken it. He tries to get Dick to return the watch, but is unsuccessful. What would you advise John to do?

a. (63 chose this) Take something from Dick and tell him that he won't get it back until he returns the watch.

b. (7 chose this) Go to the principal and tell him what he knows.

c. (44 chose this) Send an unsigned letter to the principal telling him who stole the watch.

d. (386 chose this) Do nothing further about it, since he has already tried to do as much as he can.

10) Joan promised her little sister that she would take her to the circus, which will be in town for one day only. After she had made this promise, she found out that the school is having a paper drive on that day and ther help is needed by her class. What would you advise Joan to do?

a. (111 chose this) Help the school collect paper, since the money collected will be used for a worthy cause.

b. (21 chose this) Take her sister to the circus, because if she didn't her parents probably would be displeased.

c. (285 chose this) Talk her sister into helping her on the paper drive, since that way they could both have a good time.

d. (83 chose this) Take her sister to the circus, because she had promised to do so.

11) Sam has a brand new bicycle. Before he owned this bike, he used to borrow his friend Dan's bike whenever he needed one. Now Dan's bike is broken and he asks to borrow Sam's new one. Sam knows, however, that Dan is very careless with his things. He has frequently seen Dan mistreat his bicycle by letting it fall on the sidewalk or jumping it up over curbs. What would you advise Sam to do?

a. (23 chose this) Tell Dan that his father doesn't want him to let anyone else use his new bike.

b. (27 chose this) Tell Dan that he is sorry, but he won't let him use his bike until Dan learns how to take better care of things.

c. (342 chose this) Tell Dan that he can borrow the bike, even though Sam knows that he is taking a chance, because Dan let him borrow his bike so many times.

d. (108 chose this) Tell Dan that he can borrow the bike, but that he will have to pay for anything that happens to it.

12) Mike is on the school tennis team. In a crucial match, his opponent, needing only one more point to win the match, hits a ball close to the back line. It is called "out" by the linesman. Mike is fairly certain that it was good. What would you advise Mike to do?

a. (52 chose this) Ask to have the point played over, explaining that he is not sure about the last shot.

b. (403 chose this) Go on playing and try to win for his school, since it is the linesman's business to call the shots, and not the players'.

c. (2 chose this) Say that the ball was good, and that the opponent has won the match.

c. (43 chose this) Go on playing, because his loyalty to the school should come before other considerations.

13) Claire has been asked to go to the school dance by two boys. One of these boys is very popular and good-looking but Claire knows that he asked her to go only because the girl he wanted to go with is visiting friends in another city. The other boy is rather unpopular and not nearly so good-looking, but Claire knows that she was his first choice. What would you advise Claire to do?

a. (286 chose this) She should go with the popular boy since perhaps she can show him that she is just as nice as the girl he originally wanted to take.

b. (141 chose this) She should go with the popular boy since if other boys see her with him they might ask her for dates in the future.

c. (52 chose this) She should go with the unpopular boy since she feels sure that if she accepts this time he will ask her to go on many more dates.

d. (21 chose this) She should go with the unpopular boy since she knows that he will probably try harder to show her a pleasant evening.

14) Jill buys a new blouse. She wears it just one afternoon, when a group of her girl friends is visiting her. They all agree that it really doesn't look good on her. After thinking about it, and looking at it in the mirror several times, she has to agree with them. She knows that the store where she bought the blouse will not take back clothing which has been worn, but the blouse has been worn such a short time that it shows no signs of wear or soil marks. What would you advise Jill to do?

a. (143 chose this) Keep the blouse nice and new, and give it to someone else later on as a birthday present.

b. (127 chose this) Take back the blouse without mentioning the fact that it had been worn, but tell them the truth if they ask about it.

c. (123 chose this) Take back the blouse and tell them that it has not been worn.

d. (107 chose this) Keep the blouse, even though she will seldom wear it.

15) Jim is calling a friend on the telephone, early in the morning. After the phone has rung three times, but before anyone answers, he realizes that he has dialed a wrong number. What would you advise him to do?

a. (7 chose this) Wait until he is sure no one is going to answer. If someone answers, explain immediately that he has dialed a wrong number.

b. (397 chose this) Hang up before the party answers, because they will probably be angry after getting up to answer a wrong number.

c. (33 chose this) Wait until he is sure no one is going to answer. If someone answers, ask for his friend even though he already knows it is a wrong number.

d. (63 chose this) Hang up, because it does not appear as if the phone is going to be answered anyway.

16) Betty considers herself to be at least average in such things as attractiveness and personality. However, she has been attending Johnstown High School for several months, and she feels left out of things. Although no one is unkind to her, she does not seem to be invited many places, and she has not made many friends. She formerly attended Georgetown High School, where she seemed to be of at least average popularity. What would you advise Betty to do?

a. (114 chose this) Take part in more extracurricular activities.

b. (80 chose this) Pick out someone she knows fairly well and ask her why she is not more popular.

c. (302 chose this) Wait a few months, since she is still very new in the school.

d. (4 chose this) Try to improve her appearance by following beauty tips in newspapers, or going to a beauty salon.

17) Tom's job is to keep the lawn mowed around his house. One week, because of bad weather, he is unable to mow the lawn until Saturday, and the grass is quite high. Tom begins his work, which he knows will take him at least three hours, when several of his friends come by, and ask him to play baseball with them. They tell him that they need him in the game, because he is the best pitcher in the neighborhood. What would you advise Tom to do?

a. (103 chose this) Ask the boys to bring a couple of their own lawn mowers over to help him, so that he can get done faster.

b. (74 chose this) Mow the lawn first, since the longer he waits, the tougher the job will be.

c. (314 chose this) Leave to play baseball, since he can still mow the lawn Saturday afternoon or Sunday.

d. (9 chose this) Tell the boys that he's sorry he can't play baseball, but that he has his job to do.

18) Mary telephones a friend of hers in a nearby city. She makes the call from a phone booth. The call costs thirty-five cents. When she hangs up, twenty cents drops into the coin return slot. What would you advise Mary to do?

a. (3 chose this) Drop the coins back in the payment slots.

b. (17 chose this) Keep the money, because she probably didn't talk the full time anyway.

c. (401 chose this) Put the coins in her pocketbook and consider herself lucky.

d. (79 chose this) Use the money to call another friend, since this way the telephone company will get their money anyway.

19) Sandra is planning to attend Greeview College in the Fall. She has the choice of living in a dormitory with a lot of students who will be strangers to her or living with friends of the family who have a home near the college. What would you advise Sandra to do?

should

a. (4 chose this) She/consider the possibility of going to another college that some of her friends are attending.

b. (82 chose this) She should really not make the decision by herself. She should ask her parents what to do.

c. (203 chose this) She should live at her friends' home for the first year or until she begins to feel at home at the college and then she should move into the dormitory.

d. (211 chose this) She should live in the dormitory since part of the fun of college is getting to make new friends.

20) Peter returns a library book, which he knows has been overdue for three days. When the librarian takes the book, she does not notice that it is overdue, stamps the card, and returns the book to its proper place. What would you advise Peter to do?

a. (53 chose this) Point out to her that the book is overdue, because they will probably notice it sooner or later, and charge him for it anyway.

b. (17 chose this) Point out the mistake to the librarian, because he really owes this money.

c. (402 chose this) Forget it, since the fine is so small that it's not worth worrying about anyway.

d. (28 chose this) Forget it, because it would only embarass the librarian to point out her error.

21) Jerry has a chance to visit Europe during the summer. He has to decide, however, whether he will spend only a few days in each country or whether he should plan to visit fewer countries but spend more time in each one. What would you advise Jerry to do?

a. (314 chose this) He should visit as many different countries as possible even if he can only spend a short time in each one since then he will at least be able to say, "I've been there."

b. (127 chose this) He should plan to visit many countries but he should try to go on organized sight-seeing tours in each country so that he would be able to see as much as possible in a short amount of time.

c. (16 chose this) He should visit only one or two countries but while there he should try and read as much as possible about the countries that he is unable to visit.

d. (43 chose this) He should spend almost all of this time in one country since this is the only way he will get to know anything about that country.

22) Sarah's aunt who is visiting her, gives her a sweater for her birthday. Sarah doesn't like the color of the sweater at all. What would you advise her to do?

a. (22 chose this) Keep the sweater, even though she dislikes it very much.

b. (323 chose this) Wait until the aunt leaves, and then exchange the sweater for something she wants.

c. (53 chose this) Wait until the aunt leaves, and then try to dye the sweater a different color.

d. (102 chose this) Ask the aunt if she may exchange the sweater, even though this may hurt the aunt's feelings.

23) Phil is a member of the school safety patrol, and is assigned to lunch-time duty at a street corner a few blocks from the school. Usually he eats his lunch at home and then returns to his patrol post, where he stays until the last bell has rung at school. One day he is helping his father during lunch hour and forgets the time. He not only misses his patrol duty, but arrives at school a few minutes after the last bell has rung. His teacher does not say anything to him, since she believes that he has been on patro duty. What would you advise Phil to do?

a. (11 chose this) Tell the teacher he forgot the time, even though this might mean he would lose his position on the patrol.

b. (176 chose this) Tell the teacher he forgot the time, because some of the other children might have noticed his absence from his post and tell the teacher later on.

c. (214 chose this) Forget the whole thing, unless someone asks him about it, in which case he should tell the truth.

d. (199 chose this) Forget the whole thing, since no harm seems to have been done.

24) Walt has a part-time job paying him ten dollars a week. He has saved thirty-five dollars from his pay. He wants to buy himself a radio-phonograph for his room. He has looked at two different models, one selling for forty-five dollars, and one selling for a hundred dollars. The more expensive one, which is quite a bit superior to the cheaper one, may be purchased on time payments. What would you advise Walt to do?

a. (307 chose this) Wait one week and buy the cheaper phonograph.

b. (113 chose this) Delay buying the hundred-dollar phonograph until he has saved enough money to pay for it all at once.

c. (38 chose this) Try to get the storekeeper to let him take the forty-five dollar phonograph now for thirty-five dollars, paying him the other ten dollars next week.

d. (142 chose this) Buy the hundred-dollar phonograph for thirty-five dollars down and five dollars a week.

25) Whitewater High School is holding its annual election of officers. Helen had decided for whom she will vote for all offices, with the exception of the presidency. Beverly, a very good friend of Helen's is running for this office, and Helen thinks she would be very capable of fulfilling the duties of the presidency. But a boy named Ted is also running for this office. Helen doesn't know him very well, but she thinks he may be even more capable than Beverly. What would you advise Helen to do?

a. (7 chose this) Vote for Ted, because it looks better for a boy to be class president than for a girl to be.

b. (370 chose this) Not vote at all, because this is the fairest thing to do if she cannot make up her mind.

c. (10 chose this) Vote for Ted, because he is probably a little more capable.

d. (123 chose this) Vote for Beverly, because she knows her much better. Ted may not be so capable as she thinks.

## PERSONAL OPINION QUESTIONNAIRE

The following statements are ones on which people show some difference of opinion. You are to read each statement carefully and decide whether you agree or disagree with that statement. In some cases you might find it difficult to decide but you should indicate whether you tend to agree or disagree with each statement. Obviously, there are no right or wrong answers, since the statements are matters of opinion only. Although there is no time limit, it is best not to spend too much time on any one item.

You are to indicate whether you agree or disagree by making a check (✓) in the appropriate box of the answer sheet. DO NOT MAKE ANY MARKS ON THE QUESTIONNAIRE ITSELF.

1. People all over the world are pretty much alike in what they consider to be right and wrong.
2. There are some circumstances under which it is all right to steal.
3. Some people never feel the urge to do something wrong.
4. There's not much sense in getting stirred up over the wrong-doings in the world since you can't do much about them anyway.
5. Anybody might become a criminal if he grew up under extremely poor conditions.
6. Everybody who lives in Chicago is a little bit responsible for a crime which is committed there.
7. In punishing a person the important thing is what he did not why he did it.
8. Johnnie cut a hole in his new pants because he didn't like them. Jimmie wore his new pants out to play football and accidently tore a huge hole in them. Both boys should receive the same punishment from their parents.

9. A student who takes material home from school without the teacher's permission is worse than a teacher who takes home material from school without the principal's permission.

10. The best way to overcome temptation is to imagine what would happen to you if you behaved incorrectly.

11. People can't help but feel sorry for a criminal even though his crime is a horrible one.

12. The best reason for doing the right thing is because this is how your parents would like you to behave.

13. The most important thing in life is to get along with your fellow man.

14. Sometimes you know a thing is right or wrong without giving it any thought.

15. The reason we have more crime today than we used to is because criminals are treated too leniently today.

16. If teachers and parents don't behave as they should, it's not right to expect children to do so.

17. If you do something wrong you are bound to get punished for it in some way, sooner or later.

18. To think about doing something wrong is just as bad as doing it.

19. The main reason students should not cheat on examinations is because this will not help them to learn.

20. It is worse to lie to a teacher than it is to lie to a fellow student.

21. If a school doesn't run right, it is as much the fault of the students as it is of the teachers and principal.

22. The best way to stay out of trouble is to join an organization like the Boy Scouts or Girl Scouts.

23. It is worse to get caught doing something wrong, than to get away with it.

24. The best way to stop people from doing something wrong is to remove the temptation.

25. Sometimes it is all right to tell a lie.

26. You can't really become an adult without having some clashes with your mother and father.

27. For a person who is really good the right way of behaving comes to him almost automatically.

28. If a man lived by himself on a desert island he could not do anything which would be wrong or bad.

29. You should not say unkind things to another person, even if he greatly irritates you.

30. You should support all the actions of a chosen leader, even if you sometimes disagree with his ideas or ways of doing things.

31. It is all right to be late to a meeting if you know that other people are going to be late also.

32. Even though you may be called "preachy" for doing it, you should not hesitate to tell others when certain of their acts are wrong.

33. If you find an article of little value it is foolish to spend time searching for the owner.

34. Some matters in life are so important that it would be foolish not to cheat a little to gain them.

35. When the school is run in such a way that student rights are disregarded, or an injustice is done to certain students, you should protest against such practices, even though you may suffer from doing so.

36. It is all right to copy an answer from a neighbor's paper if you knew the answer but cannot remember it at the moment.

37. A student need not feel that he should straighten up a disorderly room at school if he was not responsible for the disorder.

38. When you see another student misusing school materials you should not interfere in what is his own affair by trying to stop him.

39. You should stop going around with friends whose values and whose standards of behavior differ greatly from yours.

40. You need not feel obliged to keep a promise if you had to make it hurriedly or thoughtlessly.

41. Although everyone should stand by the right when forced to express an opinion, the best thing to do is to keep out of situations which call for the expression of an opinion.

42. You should tell a referee that the other side should be given the basketball if you were the one who knocked it out of bonds, when the referee did not know who last touched it.

43. You need not feel obliged to be faithful to a friend who has done something bad to you.

44. People can't help but feel angry toward a criminal even though he might have had a good reason for doing what he did.

45. An employee should refuse to work for an employer whose business practices are not completely above board.

## DESCRIPTIVE WORDS[1]

Below are listed a number of words in groups of three. These are words which describe qualities you might like to possess. In each group you are to decide which word describes you as you would most like to be, and which word describes you as you would least like to be. On your answer sheet place an "M" beside the letter which corresponds to the adjective describing the quality you would most like to have. Place an "L" beside the letter which corresponds to the adjective which describes the quality you would least like to have. For each group of three words you should have two letters on the answer sheet, one "M" and one "L".

| Example: | Answer Sheet |
|---|---|
| 45. a. intelligent | 45. a. M |
| b. witty | b. L |
| c. humorous | c. |

In the example above the person answering would most like to be intelligent and would least like to be witty. In some cases you may find it difficult to make a decision, since you might like to possess the qualities described in all three words. Nevertheless, you are to choose the one word which appeals to you most and the one word which appeals to you least in each group. Obviously, there are no "right" or "wrong" answers. DO NOT WRITE ON THE TEST BOOKLET.

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[1] Separate forms were prepared for boys and for girls. When two adjectives appear side by side below (e.g., "strong/cute") the first appeared in the boy's form of the instrument and the second in the girls' form.

1. a. honest
   b. strong/cute
   c. popular

2. a. handsome/pretty
   b. likeable
   c. loyal

3. a. truthful
   b. cooperative
   c. skillful/graceful

4. a. brave/lovely
   b. helpful
   c. kind

5. a. good
   b. clean
   c. friendly

6. a. agreeable
   b. dutiful
   c. active

7. a. cheerful
   b. muscular/beautiful
   c. modest

8. a. sociable
   b. well-dressed
   c. courageous

9. a. conscientious
   b. courteous
   c. alert

10. a. athletic/poised
    b. fair-minded
    c. amusing

11. a. neat
    b. polite
    c. just

12. a. honorable
    b. refined
    c. personable

13. a. tall/slender
    b. jolly
    c. moral

14. a. agile/bubbling
    b. responsible
    c. well-mannered

15. a. rugged/gorgeous
    b. unselfish
    c. interesting

16. a. vigorous
    b. impartial
    c. exciting

17. a. faithful
    b. amiable
    c. good-looking

18. a. ethical
    b. desirable
    c. attractive

19. a. congenial
    b. lively
    c. consistent

20. a. understanding
    b. generous
    c. energetic

## THE G-J-G VERBAL THINKING SPEED TEST[1]

Name______________________________________ Age_______ Grade_______

Date____________________

This is a test of how fast you can think in sentences. Complete each of the following sentences so that it makes sense. You may use either a word or a phrase, although a phrase is preferable. Since you will have only a limited time, work quickly. In most cases the best way to answer the test is to put down the first thing that comes to your mind after you read the beginning of the sentence. Don't worry about spelling, but write as quickly and as legibly as you can.

Example: When Al scored the goal, he ________________________

You could finish this sentence by writing: was happy, or wanted to score another, or stopped playing and went home, or some other answer that makes sense.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO BEGIN

DO NOT SKIP ANY SENTENCES

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[1] Separate forms were prepared for boys and for girls. Masculine names and pronouns were used in the boys' form and feminine names and pronouns in the girls' form. The two forms are combined in the stentence stems given below.

1. When Frank/Frances has nothing to do, he/she______________________

2. When Stan/Jean grows up he/she wants to become a(n)________________

3. When Jim/Peggy has something to say and others are around, he/she______

__________________________________________________________________

4. Hugh's/Ethel's reputation is that he/she_________________________

5. When told that he/she failed the test, Gene/Lois____________________

6. Bill's/Betty's family_________________________________________

7. Henry/Helen looks up to a person who___________________________

8. Whener Dave/Dorothy feels himself/herself to be on trial, he/she_______

__________________________________________________________________

9. If the choice of a permanent occupation were left up to him/her, Ken/Kate would choose_____________________________________________________

10. Floyd/Susan feels that most people who meet him/her for the first time think he/she is__________________________________________________

11. When they asked Al/Ann to be in charge, he/she____________________

__________________________________________________________________

12. Above all, Joe/Joan wishes his/her father were____________________

13. After finishing school, Hal/Florence_____________________________

14. Lou/Laura feels there is nothing worse than________________________

__________________________________________________________________

15. From past experience, Walter/Mary knows that his/her teacher's opinion of him/her is_________________________________________________

16. Most jobs with responsibility make Harold/Mildred feel_______________

__________________________________________________________________

17. Compared with other people, Bert/Blanche feels himself/herself to be___

__________________________________________________________________

18. Tom's/Carol's mother__________________________________________

19. When Fred/Freda is asked to describe the work that might make him/her happiest, he/she says____________________________________________

20. The reason Stan/Shirley might give up trying is____________________

______________________________________________________________

21. Working with others all the time makes Henry/Barbara________________

______________________________________________________________

22. Jerry/Janet thinks he/she is best at_____________________________

23. Nick's/Nancy's opinion of most teachers is that____________________

______________________________________________________________

24. When they try to get Dick/Doris to be like his/her mother, he/she_____

______________________________________________________________

25. The work that has the greatest appeal for Ben/Beth is_______________

______________________________________________________________

26. If Phil/Phyllis could have three wishes, he/she would choose__________

______________________________________________________________

27. When Roy/Ruth sees others doing better than he/she is, he/she________

______________________________________________________________

28. Steve/Lucy believes most grown-ups think of him/her as being_________

______________________________________________________________

29. If Leo/Lois could begin all over again, he/she______________________

______________________________________________________________

30. If his/her father could change, Bob/Ellen would want him to be_______

______________________________________________________________

31. Pete's/Pat's ambition is _________________________________________

32. The thing that Ken/Karen regrets most is__________________________

33. When Ed/Edith thinks that the odds are pretty much against him/her, he/she__________________________________________________________

34. Ted/Norma feels his/her family thinks he/she is ____________________

35. Earl/Myra feels happiest when ____________________________

36. Above all, Joe/Joan wishes his/her mother was ____________________

37. From past experience, Lee/Martha feels most people are ______________

______________________________________________________________

38. The thing that makes Al/Ann study hardest is ____________________

______________________________________________________________

39. Ten years from now, Mike/Mary wants to be ________________________

40. From past experience, no matter what others think, Charles/Charlotte himself/herself knows that he/she ____________________________

41. After Paul/Paula finishes a test, he/she thinks that he/she __________

______________________________________________________________

42. Tom's/Carol's father ______________________________________

43. Jack/Judith always wanted to be a(n) __________________________

44. Don/Dora believes most people work because they __________________

45. Ralph/Stella often thinks of himself/herself as __________________

46. When George/Gladys tries to do the lesson and can't, he/she __________

______________________________________________________________

47. The reason Mort/Marian tries to get ahead is ____________________

48. Like most people, Hal/Florence sometimes thinks his/her family is _____

______________________________________________________________

49. Alan's/Alma's favorite subject is ____________________________

50. If there is one thing that might make Steve/Lucy quit a job, it is ____

______________________________________________________________

51. Carl/Catherine thinks most people think of him/her as ______________

______________________________________________________________

52. When told he will have to do the whole thing by himself, Harry/Harriet__

______________________________________________________________

53. If John/Evelyn could achieve one thing during his/her life-time, he/she would want it to be ______________________________

54. If his/her mother could change, Bob/Ellen would want her to be ______

______________________________

55. Herb/Janet often feels that school ______________________________

56. When Dan/Elaine thinks the job is too much for him, he/she ____________

______________________________

57. From past experience, Ben/Ruth thinks the worst thing about himself/herself is ______________________________

58. Ray/Helen feels that his/her chief aim in life is to ______________

______________________________

59. When they try to get Dick/Doris to be like his/her father, he/she ____

______________________________

60. When Pete/May is asked what he/she really would like to do best, he/she says ______________________________

## THE G-J-G TEST OF BEHAVIOR

### For the use of Schools, Colleges and Records Offices

Name______________________________ Age______ Grade________

Date__________________

This is a test to find out how you behave in certain situations or when certain things happen to you. In this test you are given the first part of a sentence, and you are to finish the sentence so that it tells something about you. There are no right or wrong answers, but what you say will tell something about the kind of a person you are. Don't worry about spelling, but write as legibly as you can. Don't waste time.

Example: When I am given a gift, I ______________________

One person might write: am very happy. Another person might write: feel sorry since I can't give one back. Or a third person might write: try it on right away. And so on. The answer you write should tell how you feel or act in the situation.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO BEGIN

DO NOT SKIP ANY SENTENCES

1. When I have nothing to do, I ______

2. When I grow up I want to become a(n) ______

3. When I have something to say and others are around, I ______

______

4. My reputation is that I ______

5. When told that I failed the test, I ______

6. My family ______

7. I look up to a person who ______

8. Whever I feel myself to be on trial, I ______

______

9. If the choice of a permanent occupation were left up to me, I would choose ______

10. I feel that most people who meet me for the first time think I am ______

______

11. When they asked me to be in charge, I ______

______

12. Above all, I wish my father were ______

13. After finishing school, I ______

14. I feel there is nothing worse than ______

______

15. From past experience, I know that my teacher's opinion of me is ______

______

16. Most jobs with responsibility make me feel ______

______

17. Compared with other people, I feel myself to be ______

______

18. My mother ______

19. When I am asked to describe the work that might make me happiest, I say________________________________________

20. The reason I might give up trying is____________________

21. Working with others all the time makes me____________________

22. I think I am best at______________________________

23. My opinion of most teachers is that____________________

24. When they try to get me to be like my mother, I ____________________

25. The work that has the greatest appeal for me is____________________

26. If I could have three wishes, I would choose____________________

27. When I see others doing better than I am, I ____________________

28. I believe most grown-ups think of me as being____________________

29. If I could begin all over again, I ____________________

30. If my father could change, I would want him to be____________________

31. My ambition is______________________________

32. The thing that I regret most is____________________

33. When I think the odds are pretty much against me, I ____________________

34. I feel my family thinks I am______________________________

35. I feel happiest when ______________________________

36. Above all, I wish my mother were ______________________________

37. From past experience, I feel most people are ______________________________

______________________________

38. The thing that makes me study hardest is ______________________________

______________________________

39. Ten years from now, I want to be ______________________________

______________________________

40. From past experience, no matter what others think, I myself know that I

______________________________

41. After I finish a test, I think that I ______________________________

42. My father ______________________________

43. I always wanted to be a(n) ______________________________

44. I believe most people work because they ______________________________

______________________________

45. I often think of myself as ______________________________

46. When I try to do the lesson and can't, I ______________________________

______________________________

47. The reason I try to get ahead is ______________________________

______________________________

48. Like most people, I sometimes think my family is ______________________________

______________________________

49. My favorite subject is ______________________________

50. If there is one thing that might make me quit a job, it is ______________________________

______________________________

51. I think most people think of me as ______________________________

52. When told I have to do the whole thing by myself, I ______________

______________________________________________

53. If I could achieve one thing during my life-time, I would want it to be

______________________________________________

54. If my mother could change, I would want her to be ______________

______________________________________________

55. I often feel that school ______________________

______________________________________________

56. When I think the job is too much for me, I ______________

______________________________________________

57. From past experience, I think the worst thing about myself is ________

______________________________________________

58. I feel that my chief aim in life is to ______________

______________________________________________

59. When they try to get me to be like my father, I ______________

______________________________________________

60. When I am asked what I really would like to do best, I say ________

______________________________________________

## DO YOU SOMETIMES?[1]

Sometimes we do things that perhaps we should not do. And sometimes we fail to do things that we should do. Below are listed some things which you may or may not have done. In answering these questions it is important that you attempt to be as honest as possible. Indicate whether the following sentences describe things you have thought or done by checking "Yes" or "No" in the appropriate box on the answer sheet. Please do not make any marks on this booklet.

Obviously, there are no "right" or "wrong" answers, since the answers will be different for different individuals.

1. I sometimes say unpleasant things about a person that I would not tell him to his face.

2. I have sometimes been tempted to claim that I was older than I really am.

3. I always apologize when I have been rude or discourteous.

4. If I could get into a movie without paying, and be sure I was not seen, I would be willing to do it.

5. When I leave a party which I didn't enjoy, and the hostess asks if I had a good time, I am sometimes tempted to tell her the truth.

6. I have at times tried the lever on a gum or candy machine to see if I could get some without paying.

7. If a friend of mine was losing an argument with someone I didn't particularly like, I might tell a lie to help him win it.

8. I have at times been tempted to pull the handle when I pass a fire alarm box.

9. When I am caught breaking a rule, I have at times pretended that I didn't really know the rule.

10. I always do things promptly, instead of putting them off.

11. I always play fair in games.

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[1] This is an adapted version of a test, bearing the same name, which is part of Cattell's Objective Analytic Test Battery. The original instrument (designated as Gl1) may be obtained from: IPAT, 1602 Coronado Drive, Champaign, Illinois.

12. I have sometimes thought of pretending I was sick, to get out of doing something I didn't want to do.

13. I am always careful with things that do not belong to me, even if they belong to someone I don't particularly like.

14. I have sometimes pretended that I didn't hear someone, when they told me to do something I didn't want to do.

15. My table manners are just as careful when I am at home as when I eat out in company.

16. I always keep secrets that I promise to keep.

17. At times I have felt the urge to keep something I found, even though I knew that it would be fairly easy to find the owner.

18. I always feel sorry for someone I know who becomes ill or suffers a similar misfortune.

19. I have sometimes felt like swearing at my mother and father.

20. I have sometimes hated a person so much that I have had a momentary impulse to kill him.

21. Sometimes I am tempted to pretend that an illness or hurt is worse than it is, in order to get sympathy.

22. I have sometimes picked on or bullied someone smaller than myself.

23. I am sometimes tempted to wear a pair of dirty socks, instead of getting out clean ones.

24. I have sometimes blamed other people for something which was my own fault.

25. I always admit it when I am wrong.

26. I have sometimes copied or cheated in a test or examination.

27. Sometimes I am tempted to take money I need when there is not much chance of getting caught.

28. I sometimes fool the teacher into believing that I understand something when in fact I do not and have not studied it.

29. I am just as polite to people at home as when I am out in company.

30. Sometimes I think of things that are too bad or dirty to talk about.

## Appendix B

## INSTRUMENTS USED IN DESCRIBING THE EXPERIMENTAL GROUPS

All of the instruments used in describing the experimental groups were discussed in Chapter 2. Only those designed especially for this study are reproduced here. The instruments are:

1. Achievement tests (Not reproduced here. See Chapter 2)
2. Autobiography
3. Drawing Test
4. Outstanding Traits Test (Student's form)
5. McClelland Need:Achievement Pictures (N-A Test of Imagination)
6. Student Opinion Poll
7. Strodtbeck's V-Scale
8. Teacher Ratings
9. Parent Questionnaire
10. Parent Interview Schedule

## AUTOBIOGRAPHY

Write an autobiography—a history of your life so far. Do this in any way you want, but some of the things you might wish to cover are:

A. Family. Into what kind of family were your born? How has your family changed over the years? How would you describe your family at present?

B. Experiences. What are the earliest things you can remember as a very small child, long before you entered school? What are your most pleasant memories? Your least pleasant memories? What single experience outside of school do you remember best?

C. School. What kinds of schools have you attended? What subjects and teachers did you like best? Which subjects and teachers did you like least? What single school experience do you remember best?

D. Your friends and associates. What kinds of people, your own age and others do you like best? What kinds of people do you like least? How would you describe your best friend?

E. Recreation. What kinds of books do you read? What is your chief source of entertainment? What are your favorite hobbies? How do you spend a typical Sunday afternoon?

F. Future educational plans. What kinds of school do you wish to attend in future years? What kinds of things would you like to study?

G. Adulthood. What kind of person, professionally and socially, would you like to be as an adult? What kind of life do you think you will be leading 10 years from now? Twenty-five years from now? What would you like other adults to think of you?

NAME______________________________________ GRADE__________ DATE________________

Directions: In the space below, draw a picture appropriate to the title, "Playing Tag in the School Yard." You may draw any picture you like - whatever you may imagine for this theme.

"PLAYING TAG IN THE SCHOOL YARD"

**Name** ______________________ **Grade** ________ **Date** ______

## OUTSTANDING TRAITS TEST

**In this booklet you will find descriptions of thirteen students who differ from each other in important ways. Your job will be to decide which of the students are likely to do best in certain situations. You will do this by ranking them. This will not be easy, but it is important that you rank all thirteen for each situation.**

**Although your work will not be timed it is important that you do not spend too much time making up your mind. There are no "right" or "wrong" answers — what you think is all that matters.**

Part I: Rank these students on the degree to which you would like to have them as members of your class. Write the number 1 in the box for the student you would most like to have as a member of your class, the number 2 in the box for the one you would next most like to have, and so on. Write the number 13 in the box for the student you would least like to have as a member of your class. When you have finished there should be thirteen different numbers on the page.

Student A. Here is the student who is best at getting along with other people ☐ A

Student B. Here is the student with the most pep and energy of anyone in the school ☐ B

Student C. Here is the student with the most outstanding traits of character (like honesty and trustworthiness) in the school ☐ C

Student D. Here is the healthiest student in the school ☐ D

Student E. Here is the student who is best able to look at things in a new way and to discover new ideas ☐ E

Student F. Here is the best-looking student in the school ☐ F

Student G. Here is the student who gets the highest score in an intelligence test ☐ G

Student H. Here is the most emotionally stable student, that is, the one who is happy most of the time and doesn't get easily upset over little things ☐ H

Student I. Here is the student who knows best what he wants and works steadily toward getting it ☐ I

Student J. Here is the student who gets the highest marks in his school subjects ☐ J

Student K. Here is the student with the widest range of interest in the school ☐ K

Student L. Here is the outstanding athlete in the school ☐ L

Student M. Here is the student with the best sense of humor in the school ☐ M

(Go on to the next page)

Part II: Rank these students on the degree to which you think they will succeed in adult life. Write the number 1 in the box for the student you think is most likely to succeed, the number 2 in the box for the one next most likely to succeed, and so on. Write the number 13 in the box for the student you think is least likely to succeed. When you have finished there should be thirteen different numbers on the page.

(N.B.: The descriptions of Students A through M are identical to the ones given on the first page of this test and are not reproduced here).

Part III: Rank these students on the degree to which you would like to be like them. Write the number 1 in the box for the student you would most like to be like, the number 2 in the box for the one you would next most like to be like, and so on. Write the number 13 in the box for the student you would least like to be like. When you have finished there should be thirteen different numbers on the page.

(N.B.: The descriptions of Students A through M are identical to the ones given on the first page of this test and are not reproduced here).

Part IV: Rank these students on the degree to which teachers like them. Write the number 1 in the box for the student that teachers like most, the number 2 in the box for the one that teachers like next most, and so on. Write the number 13 in the box for the student that teachers like least. When you have finished there should be thirteen different numbers on the page.

(N.B.: The descriptions of Students A through M are identical to the ones given on the first page of this test and are not reproduced here).

Name________________________________ Grade_______ Date___________

## N-A TEST OF IMAGINATION

This is a test of imagination.

We are going to show you a series of pictures and ask you to tell a story that is suggested to you by each picture. The pictures will be projected on the screen one at a time. You will have twenty seconds to look at the picture and then four minutes to make up and write a story about it. On the top of each page in your test booklet is a picture number. You are to use one page for each picture. Also on the top of each page are written the following questions which will guide your thinking and enable you to cover all the elements of a story in the time allowed:

1. What is happening? Who are the persons?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

Start your writing just below these questions and if the space is not enough to finish your story, use the back of the page.

Use your imagination and thinking as quickly as possible and write as complete a story as you can. There are no right or wrong answers or stories. Feel free to write whatever kind of story is suggested to you when you look at the picture. Do not worry about spelling, grammar, or punctuation; they are not important. The only important thing is the story you will tell. Do not merely describe the picture you see. Tell a story about it; an interesting, and vivid story.

Be sure to read and keep in mind the four questions which appear at the top of each page while writing your story.

The examiner will keep time and tell you when it is time to finish your story and get ready for the next picture.

## FIRST PICTURE

1. What is happening? Who are the persons?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

(N.B. The questions are repeated on a separate page for each of the six pictures).

# STUDENT OPINION POLL

As you probably know, there has been considerable public discussion during the past few months concerning American education. In order to cut through the haze of arguments and counter-arguments, a research team supported by the United States Office of Education is interested in obtaining information from the students themselves. While student opinion is not the only factor to be considered in planning for better schools, it is clearly a very important factor and one which has been overly neglected in the past.

The U. S. Office of Education researchers recognise the difficulty of questioning students concerning education "in general". For this reason, the questions which follow focus upon your experiences in the school in which you are now studying. Wherever the words "school", "teacher", "student", and the like, appear on this form, they refer to this school, the teachers you have had while studying here, your past and present classmates in this school, and so forth.

All of the information obtained from this questionnaire will be treated confidentially. It will never be shown to teachers or other school personnel in a form which will allow them to identify you. We are asking you to place your name on the questionnaire, however, so that the responses may be related to other information available on the school.

Answers are to be put on the separate answer sheet.
Do not mark this booklet!

## DIRECTIONS — PART I

**Answer the following questions by placing an "X" in the appropriate box on the answer sheet. Do not place any marks in this booklet.**

**1. In determining the basic nature of its program, the school**
   **a) pays too much attention to the wishes of parents.**
   **b) pays just about the right amount of attention to the wishes of parents.**
   **c) pays too little attention to the wishes of parents.**

**2. In my opinion the variety of subjects offered in the school is**
   **a) too broad.**
   **b) just about right.**
   **c) not broad enough.**

**3. While there are some differences among them, most teachers in this school are**
   **a) Very inspiring.**
   **b) Quite inspiring.**
   **c) Somewhat inspiring.**
   **d) Not inspiring.**

**4. In some schools the administrators (principals, superintendents, etc.) have close contacts with students, while in other schools, such contacts are rare. It seems to me that in this school**
   **a) the administrator keeps such close contact with student affairs that they frequently involve themselves in matters that do not require their attention.**
   **b) the contacts between administrators and students are about right.**
   **c) the administrators have contacts with students so rarely that they are unaware of many student problems.**

**5. The freedom to contribute something in class without being called upon by the teacher is**
   **a) discouraged more than it should be — students do not get enough opportunity to have their say.**
   **b) encouraged more than it should be — students seem to be rewarded just for speaking even when they have little to say.**
   **c) handled about right.**

**6. The things that I am asked to study are**
   **a) of great interest to me.**
   **b) of moderate interest to me.**
   **c) of limited interest to me.**
   **d) of little interest to me.**

7. Concerning the opportunities for getting together socially with other students in this school, my opinion is that
   a) There are altogether too many things going on, so that you are continually distracted from homework and other individual activities.
   b) The opportunities for getting together socially are about right.
   c) There are not nearly enough opportunities for getting together with other students.

8. In terms of adequate preparation for college I believe the program of the school is
   a) more severe and rigorous than it needs to be.
   b) about right.
   c) less severe and rigorous than it should be.

9. The content of different courses from year to year is
   a) too repetitious -- the same material seems to be reworked again and again.
   b) repeated just enough to allow for a feeling of continuity.
   c) so unrelated that new material does not seem to build on earlier work.

10. In this school the teachers' interest in students' academic work might best be described as
    a) too great -- they intrude upon the privacy of the student.
    b) just about right.
    c) not great enough -- teachers are not concerned enough with the work of students.

11. When school-work activities requiring full teacher support occur, my feeling is that
    a) nearly all teachers cooperate.
    b) most teachers cooperate.
    c) some teachers cooperate.
    d) few teachers cooperate.

12. It is a common practice in many classrooms to allot some class time for individual study. I find this study time allotment
    a) so generous as to be somewhat wasteful.
    b) adequate enough so that most students can get at least a good start on their work.
    c) so sparing as to be relatively worthless for any constructive activity.

13. The students in this school who receive poor grades are likely
    a) to receive more sympathy from their fellow classmates than they deserve.
    b) to be respected by their classmates more than they should be.
    c) neither a nor b.

14. From the standpoint of intellectual ability, students in this school are
    a) too bright -- it is difficult to keep up with them.
    b) just bright enough.
    c) not bright enough -- they do not provide enough intellectual stimulation.

15. On the whole the school program places
    a) less emphasis on artistic training than it should.
    b) about the right emphasis on artistic training.
    c) more emphasis on artistic training that it should.

16. Most of the subjects taught in the school are
    a) interesting and challenging.
    b) somewhat above average in interest.
    c) somewhat below average in interest.
    d) dull and routine.

17. In this school the teachers' interest in the students' private life might best be described as
    a) too great — they intrude upon the privacy of the student.
    b) just about right.
    c) not great enough — teachers are not concerned enough with the personal life of their students.

18. The student who displays a sense of humor in class is generally
    a) admired by teacher more than he should be.
    b) penalized by teachers more than he should be.
    c) neither admired nor penalized by teachers more than he should be.

19. There is often a feeling that teachers "go too fast" to permit students to really understand what is going on. In this school, the rate at which teachers usually present materials is
    a) too slow.
    b) about right.
    c) too fast.

20. Students who are outstanding athletes in their school are
    a) respected more than they should be by their fellow students.
    b) respected less than they should be by their fellow students.
    c) neither a nor b.

21. The relative emphasis upon competition and cooperation among students in this school seems to be
    a) too much emphasis upon competition to suit me.
    b) too much emphasis upon cooperation to suit me.
    c) a satisfactory balance between competition and cooperation.

22. All things considered the school program
    a) puts too much emphasis on scientific training.
    b) emphasizes scientific training in about the right degree.
    c) puts too little emphasis on scientific training.

23. The present overall curriculum of the school
    a) is about right.
    b) requires only minor revisions to make it about right.
    c) requires considerable revision.
    d) should be abandoned and replaced with a different program.

24. In general, the teachers I have had in this school seem to know their subject matter
    a) very well.
    b) quite well.
    c) fairly well.
    d) not as well as they should.

25. In evaluating the written and oral work of students
    a) too much emphasis is placed upon grammar and style and not enough upon the value of what the student is trying to say.
    b) the balance between style of expression and content is about right.
    c) so little emphasis is placed upon grammar and style that students have difficulty learning how to express themselves.

26. Students may work either by themselves or in groups. The amount of work done in groups is
    a) too great.
    b) about right.
    c) too small.

27. My observation has been that students from different economic, social, racial, and religious backgrounds get along together in this school
    a) very well.
    b) moderately well.
    c) less well than is desirable.
    d) very poorly.

28. As compared with what I feel to be desirable, the amount of "school spirit" at this school is
    a) more than enough.
    b) about right.
    c) not enough.

29. In its total program the school
    a) puts too much stress on intellectual matters.
    b) gives intellectual matters about the right emphasis.
    c) does not put enough stress on intellectual matters.

30. The extracurricular program of the school is
    a) very responsive to the needs and interests of the student body.
    b) quite responsive to the needs and interests of the student body.
    c) somewhat responsive to the needs and interests of the student body.
    d) very unresponsive to the needs and interests of the student body.

31. In matters relating to students, teachers in this school seem to be
    a) fair at all times.
    b) generally fair in their practices.
    c) occasionally unfair in their practices.
    d) often unfair in their practices.

32. In general classroom procedures are
    a) often so unorganized that it is difficult to get things done.
    b) flexible enough to meet most situations.
    c) often so rigidly organized that it is difficult to make changes.

33. Classroom seating arrangements in this school are
    a) too flexible to suit me; you can never be sure where you will sit and who will sit next to you.
    b) just about right.
    c) too rigid to suit me; it is difficult to arrange the furniture to meet special needs.

34. The students who receive top grades in this school are likely to be
    a) admired more than they should be by fellow students.
    b) rejected more than they should be by fellow students.
    c) neither admired nor rejected by fellow students.

35. In my opinion, student interest in social organizations, such as clubs, fraternities, and sororities is
    a) too great.
    b) about right.
    c) not great enough.

36. In general the subjects taught are
    a) too easy.
    b) about right in difficulty.
    c) too difficult.

37. When students are in need of special help, teachers in this school are
    a) always available.
    b) generally available.
    c) available if given special notice.
    d) available only in cases of extreme need.

38. The ability of the teachers in this school to present new material seems to be
    a) very superior.
    b) good.
    c) average.
    d) poor.

39. As compared to other methods of teaching, the practice of having students join discussion groups is
    a) used more than I feel it should be.
    b) used in about the right proportion with other methods.
    c) used less than I feel it should be.

40. The time spent in homeroom activities is
    a) always well spent.
    b) generally well spent.
    c) rarely well spent.
    d) wasted.

41. In general, students in this school take their studies
    a) too seriously.
    b) too casually.
    c) in a right proportion between a and b.

42. In some schools a lot of emphasis is placed upon student government, honor societies, and other types of formal social organization. In my opinion, the emphasis upon such activities in this school is
    a) too great.
    b) about right.
    c) not great enough.

43. The physical training program of the school is
    a) emphasized too much.
    b) about right.
    c) not emphasized enough.

44. Some things that we learn are of little use to us now but will become useful in the future; other things can be used as soon as we learn them. In this school teachers seem to
    a) focus too much upon learning that will not become useful for some time to come.
    b) focus too much upon learning that is useful to us now, neglecting things that we might need later.
    c) achieve a nice balance between things of immediate and future usefulness.

45. When it comes to grading students, teachers in this school are generally
    a) too "tough".
    b) just "tough" enough.
    c) not "tough" enough.

46. As compared to other methods of teaching, the practice of having the teacher give a lecture is
    a) used more than I feel it should be.
    b) used in about the right proportion with other methods.
    c) used less than I feel it should be.

47. Homework assignments in the school are usually
    a) carefully thought through by the teacher and clearly related to classroom work.
    b) consistent with what is going on in the classroom but not related to it in any systematic way.
    c) given without much thought and having little bearing on the classroom work.
    d) unrelated to classroom work and chiefly of a "busy work" nature.

48. The student who differs from the crowd in this school is likely to find that
    a) Most students will tend to ignore or reject him for being different.
    b) Most students do not particularly care whether or not a person differs from the group.
    c) Most students admire the person who is different.

49. In my opinion, the emphasis which students in this school place upon grooming and appearance is
    a) too great.
    b) about right.
    c) not great enough.

50. As an objective of the curriculum, social skills i. e. training on how to get along with other people, is
    a) not given enough emphasis.
    b) given just about the right amount of emphasis.
    c) given too much emphasis.

51. Some teachers are friendly and accepting to students; others are more detached and aloof. In general, the teachers in this school are
    a) very friendly and accepting.
    b) quite friendly and accepting.
    c) somewhat friendly and accepting.
    d) only occasionally friendly and accepting.

52. Individual pupils differ in their abilities and interests. Some teachers tend to ignore these differences. Other teachers pay too much attention to these differences. In general, teachers in this school
    a) focus too much upon individual differences, giving undue attention to those who happen to be most different from the group.
    b) do not focus enough upon individual differences, so that students with special talents or problems are frequently unrecognized.
    c) pay just enough attention to individual differences.

53. In general, my attitude towards the grades I have received in this school is
    a) I always receive the grades that I deserve.
    b) I generally receive the grades that I deserve.
    c) I sometimes receive the grades that I do not deserve.
    d) I frequently receive the grades that I do not deserve.

54. Teaching aids such as films, T. V., and the like
    a) are used more than I feel they should be.
    b) are used as much as they should be.
    c) are used less than I feel they should be.

55. Judging from the types of students who are my classmates, I believe that the admissions policy of this school is
    a) too restrictive, the students are too much alike.
    b) just about right.
    c) not restrictive enough, there are many students in this school who should not be here.

56. In the typical class, memory work and the learning of important facts are
    a) given too much emphasis.
    b) given about the right emphasis.
    c) not given enough emphasis.

57. In some classes the teacher is completely in control with the students having little to say about the way things are run. In other classes the students seem to be boss with the teacher contributing little to the control of the situation. In general, teachers in this school seem to take
   a) too much control.
   b) about the right amount of control.
   c) too little control.

58. In addition to teachers, some schools employ persons who are specially trained to help students with personal, vocational, and educational problems. In my opinion, this type of service in this school is
   a) so plentiful that it is sometimes forced upon you whether you want it or not.
   b) adequate to meet the needs of the students.
   c) so meager that it is difficult to obtain even when you want it.

59. When a new-comer enters this school, chances are that other students will
   a) go out of their way to accept him.
   b) are quite willing to accept him.
   c) tend to ignore him.
   d) openly reject him.

60. In general, my attitude toward school may best be described as
   a) very favorable — I like it as it is; no changes are necessary.
   b) more favorable than unfavorable — a few changes are necessary to make me entirely happy.
   c) more unfavorable than favorable — many changes are necessary before I can be entirely happy.
   d) unfavorable — I frequently feel that school is pretty much a waste of time.

## DIRECTIONS — PART II

Even before we have attended a new class in a certain subject, we have developed expectations on the basis of our previous experience with that subject. On the second page of your answer sheet, you will find a number of adjectives in the margin of the paper and the names of a number of school subjects listed across the top. Imagine that you are to attend a class in each of these subjects next year. In the column under each subject you are to check, in the appropriate boxes, the six adjectives most nearly describing your probably feelings when attending class in that subject. After you have chosen these six, place a '1' beside the check for the adjective which you would use if your choice were limited to one word, a '2' beside the check for the adjective which you would use next, and so on until you have numbered your adjectives from one to six.

When you have finished, each column should have six checks with a number from one to six beside them.

Part II

| | English | Math | Phys. Educ. | Science | Art & Music | Social Studies | Foreign Language |
|---|---|---|---|---|---|---|---|
| contented | | | | | | | |
| ignorant | | | | | | | |
| encouraged | | | | | | | |
| angry | | | | | | | |
| knowledgeable | | | | | | | |
| inadequate | | | | | | | |
| stimulated | | | | | | | |
| unnoticed | | | | | | | |
| benefitted | | | | | | | |
| dull | | | | | | | |
| confident | | | | | | | |
| unhelped | | | | | | | |
| appreciated | | | | | | | |
| alert | | | | | | | |
| uncertain | | | | | | | |
| restless | | | | | | | |
| understood | | | | | | | |
| bored | | | | | | | |
| friendly | | | | | | | |
| misunderstood | | | | | | | |
| accepted | | | | | | | |
| restrained | | | | | | | |
| rejected | | | | | | | |
| effective | | | | | | | |

# STUDENT OPINION POLL — PART III

During this academic year you have spent hundreds of hours in classes of various kinds, ranging from science and foreign language to physical education and the arts; from shop and home economics to English, mathematics, and social studies. Choose the one hour that seems to have been most worthwhile to you. Describe this class in some detail and explain why you feel it to have been most worthwhile.

DO NOT WRITE IN THIS BOOKLET.

USE THE BLANK SHEETS IN YOUR ANSWER BOOKLET.

PRECEDING PAGE MISSING

## TEACHER OBSERVATIONS

The child's behavior in the classroom setting cannot be understood without reference to observations and reactions by his teachers. The teacher is the best qualified person - indeed, he is in many ways the only person - to provide this material. Accordingly, we are asking teachers to make three observations: one dealing with teacher preferences, one with the child's social behavior, and one with the child's ability to become involved with the learning task.

Item I. This is a student whom the teacher especially enjoys having in class. When asked what kind of person you prefer as a member of your class, this is the student who comes most readily to mind. He may or may not be the one who gets along best in the classroom situation, he may or may not be the brightest child in the class, and he may or may not be the one who gets the best grades. But he is liked by you and is the sort of person about whom you are most likely to say, "Of all the children in my class, this is the one I most enjoy."

Instructions:

Please rate the students listed here according to the following scheme (all the students are in your classes this Quarter):

1. Mark H next to the ____ students whom you would rate higher than the others on this list for the quality described in this item.

2. Mark L next to the ____ students whom you would rate lower than the others on this list for the quality described in this item.

3. Mark M for all the others - this is the middle group.

4. Now, circle the H next to the ____ students who are especially high.

5. Circle the L next to the ____ students who are especially low.

## TEACHER OBSERVATIONS

The child's behavior in the classroom setting cannot be understood without reference to observations and reactions by his teachers. The teacher is the best qualified person - indeed, he is in many ways the only person - to provide this material. Accordingly, we are asking teachers to make three observations: one dealing with teacher preferences, one with the child's social behavior, and one with the child's ability to become involved with the learning task.

Item II. This is a student who gets along exceptionally well in interpersonal relationships. He may or may not be the brightest child, and he may or may not be the outstanding scholar. But he is outstanding in his ability to function harmoniously within the formal and informal social relationships of the class. He has high prestige among peers, and is likely to be sought out as a "leader" and "opinion-maker" by other students, although he may not necessarily hold student offices. The implication here is not of course that he is the "campus politician", but that he is generally liked and respected by other children.

Instructions:

Please rate the students listed here according to the following scheme (all the students are in your classes this Quarter):

1. Mark H next to the ___ students whom you would rate higher than the others on this list for the quality described in this item.

2. Mark L next to the ___ students whom you would rate lower than the others on this list for the quality described in this item.

3. Mark M for all the others - this is the middle group.

4. Now, circle the H next to the ___ students who are especially high.

5. Circle the L next to the ___ students who are especially low.

## TEACHER OBSERVATIONS

The child's behavior in the classroom setting cannot be understood without reference to observations and reactions by his teachers. The teacher is the best qualified person - indeed, he is in many ways the only person - to provide this material. Accordingly, we are asking teachers to make three observations: one dealing with teacher preferences, one with the child's social behavior, and one with the child's ability to become involved with the learning task.

Item III. This is the student who is most involved in (excited about) the learning task. Given a problem to be solved, an issue to be investigated, a work to be appreciated, he seems to get genuine pleasure from the educational experience. Learning is fun for this child. This does not mean that he is necessarily the brightest student or highest achiever, although he may be. He may not even be best liked by his teachers or peers, although again he may well be. But there is no doubt that he is interested in the new, enjoys the pursuit of discovery, gets pleasure out of knowing, and is, of all the children in your classes, most eager to learn.

Instructions:

Please rate the students listed here according to the following scheme (all the students are in your classes this Quarter):

1. Mark H next to the ____ students whom you would rate higher than the others on this list for the quality described in this item.

2. Mark L next to the ____ students whom you would rate lower than the others on this list for the quality described in this item.

3. Mark M for all the others - this is the middle group.

4. Now, circle the H next to the ____ students who are especially high.

5. Circle the L next to the ____ students who are especially low.

## SUPPLEMENTARY INFORMATION SHEET

Name of Student ______________________________

Birthplace of Father: ____________________ Date of Birth ____________ Month Year

Birthplace of Mother: ____________________ Date of Birth ____________ Month Year

Age of Parents when married: Father ________; Mother ____________

With whom is the student now living? (Check one)

- ☐ Mother and Father
- ☐ Mother and Stepfather
- ☐ Father and Stepmother
- ☐ Mother only
- ☐ Father only
- ☐ Foster parents
- ☐ Relatives
- ☐ Other (specify) __________

If the student is not now living with both his natural parents:

How old was the student when separation took place?

Under what circumstances did the separation take place? (Check one)

- ☐ Divorce of parents
- ☐ Legal separation
- ☐ Death of one parent
- ☐ Other (specify) __________

Number of children in the family ____________________

What is the birth order of the student in the family? (Check one)

- ☐ Only child
- ☐ Oldest child
- ☐ Youngest child
- ☐ Has both older and younger brothers and/or sisters

Father's Occupation: (Please be specific, e.g., Associate Professor of Mathematics; Retail store, proprietor; lathe operator; salesman of commercial insurance, etc.)

______________________________________________________________

Mother's Occupation: (If employed outside of home, please give job description and number of hours per week).

______________________________________________________________

Father's occupation at time of student's birth:

______________________________________________

Education of parents: (Please circle highest grade completed).

Father: Grade 1 2 3 4 5 6 7 8; High School 1 2 3 4
College 1 2 3 4; Post-graduate 1 2 3 4+

Highest degree held: ______________________

Mother: Grade 1 2 3 4 5 6 7 8; High School 1 2 3 4
College 1 2 3 4; Post-graduate 1 2 3 4+

Highest degree held: ______________________

How many times has the student had to change schools because the family moved its place of residence?

______________________________________________

Has the pupil expressed interest in a particular career? Yes ____; No ____

If yes, specify: ______________________________

From your observation, how good a choice do you think this is for him?

( ) Very good choice
( ) Good choice
( ) Moderately poor choice
( ) Poor choice

In terms of your present knowledge of your child's aptitudes and interests, what career lines would you think appropriate for him?

______________________________________________

______________________________________________

INT______

CODE______

## PARENT INTERVIEW SCHEDULE

NAME____________________

CHILD'S NAME____________________

ADDRESS____________________

M___
D___
S___
RM___

OTHER CHILDREN IN LAB SCHOOLS

NONE____
ONE_____
TWO_____
THREE___
FOUR____

INT__________ CODE______________

## PARENT INTERVIEW SCHEDULE

As you were told when we first contacted you, the Laboratory School is supporting a Department of Education research program, a part of which is concerned with the relationships between home life and school life. In addition to the information which is being accumulated at the school, we would like to get some information in person from the mothers of a number of children at the Lab. School. You will see as we go along that most of these questions deal with "_____________" and some of his (her) experiences at home as well as the kinds of things you have done with him (her), and hold important for him (her).

Could you give me the names and ages of your children--starting with the oldest?

Oldest________ Sex __________ Age ______ Name ______________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

1. Did you send X to nursery school?
(THEN ASK: Did you send X to kindergarten?)

A. Nursery School
1 Yes
2 No

B. Kindergarten
3 Yes
4 No

2. - 3. When X first began nursery school (kindergarten), did you find you had to spend time with him (her) before you could leave him (her) there on his (her) own?

(IF "YES" RE: NURSERY SCHOOL, THEN ASK: Did you find the same situation prevailed when X was introduced to kindergarten?)

A. Nursery School

1 No time spent
2 A week
3 More than a week

B. Kindergarten

4 No time spent
5 A week
6 More than a week

AT THIS POINT, MENTION THE FOLLOWING TO THE RESPONDENT:

I should mention to you before we proceed further that, although other members of the staff have been working with the school records as a phase of this research, I have no knowledge of any of this information which pertains to your child, such as school grades, reports and so forth. We do this because we feel we want to talk with you about your family without assuming anything which would bias our efforts to understand it.

4. During X's earliest years in school, did the teachers call to your attention or did you yourself notice anything unusual about X and school?

(And did you or the teacher notice any particularly good things?)

(Did you notice any particular difficulties which X might have had with his (her) teachers down through the years?)

A. Teacher mentioned

1 Nothing
2 Good

3 Bad (incl. difficulties)

B. Parent noticed

4 Nothing
5 Good

6 Bad (incl. difficulties)

5. (IF "YES" TO LAST QUESTION, THEN ASK: What did you do about this?)

1 Did nothing
2 Took active steps

6. - 7. Was there anything about school during those early years that X seemed especially to like?
Was there anything he (she) seemed especially to dislike?

1 Likes--

2 Dislikes--

8. - 9. As far as the Lab School is concerned, what are the things you like best about the education that X is getting there?
Is there anything about X's education at the Lab School that you are not satisfied with?

1 Satisfactions mentioned--

2 Dissatisfactions mentioned--

10. How do you suppose X would answer this question about the education he's (she's) getting at the Lab School?

1 Satisfactions--

2 Dissatisfactions--

3 Feels the same as I (we) do--

11. Do you talk with X about his (her) present school life?
(What about?)

12. (IF YES) When school life is discussed, are you and your husband first to bring up these matters or is X?
(IF "NOT AT ALL", THEN ASK: Why do you suppose these matters don't come up for discussion in your family?)

1 Parent initiates--

2 Child initiates--

3 Both initiate--

4 NOT AT ALL--

13. - 14. Have you thought of X's future educational plans? (What?)
(THEN ASK: Why do you think these plans are suitable for X?)

1 Have NOT thought:

A. Too early

B. Up to X

2 HAVE thought:

15. If you alone had to choose a career for X, what would it be?

16. How would you suggest X go about accomplishing this?

17. What has X indicated to you about colleges/and careers he (she seems to be interested in?

1 Colleges

2 Careers

18. What's your opinion of the things X has expressed interest in?

1 Positive

2 Negative

19. Comparing X's overall experience at the Lab School--grades, extracurricular activities and so forth--with that of his (her) friends, what do you feel he'll (she'll) be best at in college?

21. Speaking of his (her) friends at home, how many good friends about the same age does X have and how often does he (she) get together with them (not by phone)?

1 Can't say
2 None
3 One to three
4 Many

5 Every day during school year
6 Weekends " " "

22. Would you say X spends more of his (her) time at friends' houses or do they spend more of their time here?
(THEN, ASK: Why do you suppose this is so?)

1 Can't say
2 About the same
3 More at home
4 More at friends' houses

23. What are the advantages and disadvantages of raising X in Chicago as compared with raising him (her) in a small town or a suburb?

24. Does X go on dates?

(How often?)
1 Once or twice a week
2 Once every couple of weeks
3 Once a month
4 Just started

25. (IF "YES", THEN ASK: Have you established some rules with respect to X's dating?) (for example, about being home at a certain time).

1 None
2 Doesn't need them
3 Up to X to behave self

26. What qualities do you like to see in X's friends?

27. Are there any among X's friends whom you feel fall short of this (who have qualities you don't like to see?)

1 All OK
2 Dissatisfactions

28. When X is with his (her) friends, do you feel he (she) tends to suggest things for them to do, or is he (she) more likely to go along with what the others suggest?

1 Can't say
2 Initiates
3 Follows along
4 About same of each

29. - 30. Turning now to X's experiences at home, what sorts of things has X done as far as hobbies and lessons go?
(IF YES TO HOBBIES AND/OR LESSONS, THEN ASK: Who or what do you suppose got him (her) interested in these various things?)

1 Neither hobbies nor lessons--

2 Lessons--

Specific ones:

Who or what interested X?

Hobbies--

Specific ones:

Who or what interested X?

31. What has been the extent of X's interest in things such as nature study, the out-of-doors, animals, plants, and so forth?

1 Can't say
2 None
3 Mild or temporary
4 Intense

32. Have you felt that X's interests have been too wide or too narrow or what?

1 DK
2 Not wide enough

3 Too wide

4 About right

33. When X is about thirty years old, where do you think he (she) will be, and what do you think he (she) will be doing?

1 Can't imagine--impossible to say

2 Specifically--

34. What do you want X to be like as an adult?

35. As you recall, aside from you and your husband, are there a few people who have had a strong influence upon X's life? (inside or outside the family?)

1 No one--

2 Siblings--(in what way?)

3 Grandparents--(in what way?)

4 Other relatives--(in what ways?)

5 Others--(in what ways?)

36. As you look back, have there been any childhood heroes, or people he (she) has read about, or perhaps movie stars or bobby sox idols that appear to have been a strong influence upon X?

1 Childhood

2 Adolescence

37. What kind of interest has X expressed in what his (her) father does (did)?

1 Not appropriate

2 None or little

3 Curiosity only

4 Much interest

38. - 39. Do you suppose X feels you are an old-fashioned parent or a modern parent?

1 DK
2 Old-fashioned (In what things?)

3 Modern (In what things?)

4 Middling (In what things?)

THEN ASK: How would you describe yourself in this regard?

5 DK
6 Old-fashioned (In what things?)

7 Modern (In what things?)

8 Middling (In what things?)

40. - 41. Would you say you brought up X differently from the way you were brought up by your own parents? (In what ways?)
In what ways did you bring up X pretty much the same way you were brought up?

1 Brought up different from self--

2 Brought up same as self--

42. How far would you say you have gone in encouraging X to take an active interest in reading, politics, the fine arts and music, religion and sports? You may take them one at a time if you like.

Reading-- Not far___ Some___ A lot___

Politics--Not far___ Some___ A lot___

The Arts--Not far___ Some___ A lot___

Religion--Not far___ Some___ A lot___

Sports-- Not far___ Some___ A lot___

43. Let's turn the clock back now, and talk a bit more about the early years of X's childhood. . .To begin with, were there any prolonged periods of time during X's childhood when X's father was not at home--for example, during the Second World War?

A. At home

1 Regularly or all the time

2 Infrequently

3 Not home at all for some prolonged period

4 Other explanations

44. (IF PROLONGED PERIODS OF ABSENCE, THEN ASK: When did he return home for good?)

45. Since X was a baby, has he (she) always had a room by himself (herself) or what?

1 Never has had

2 Since a baby

3 Since advent of other children

4 Since around five years

5 Since early teens

46. As compared with other children, how good was X at taking care of his (her) things when he (she) was small?

1 Very good
2 About average
3 Not very good or "sloppy"

47. How about nowadays in regard to this?

1 A. Has changed
1 For better
2 For worse

3 B. About the same as above

48. When X was young, did you make any special effort to see that he (she) did things that little boys (girls) do, as against what little girls (boys) do?

1 DK
2 Did not
3 Did make special effort

THEN ASK: Did you do anything to discourage X from doing things that were more characteristic of little girls (boys)?

4 DK
5 Did not
6 Did discourage

49. As you recall, did you do things to assist X in learning to read and to count?
(IF GAVE ASSISTANCE: How does she do in this now?)

1 Did nothing--
2 Reading assistance--(How?)

Now:

3 Numbers assistance--(How?)

Now:

50. As you look back on the ways you have tried to make X responsible to you as far as bedtime, playing outside, leaving the house, homework, and so forth were concerned, would you say you were too lenient, not lenient enough, or what?

1 Satisfied with degree of leniency

2 Too lenient

3 Not lenient enough

51. How about your consistency in regard to these things?

1 Very consistent
2 Average--like others
3 Inconsistent in general
4 Consistent in general but inconsistent in little things

52. What things does X do nowadays that make you proud of him (her)?

53. As you think back, how did you go about rewarding X for good behavior?

54. As you recall, what kinds of things did X do when he (she) misbehaved as a child?

55. Some of the many ways that most all parents punish their children are taking away privileges, spanking them, isolating them for being naughty, shaming them or getting back at them, reasoning with them or explaining that being a good family member means being good and so forth.

We're not interested in listing all these things, but as you think back, of all the ways you tried in disciplining X, how effective did some of them turn out to be?

1 None effective

2 Most effective

3 Least effective

4 If forced into it, what would you say you used or would use as a last resort?

56. Who was the most effective disciplinarian when X was a child? you or your husband? (What's the reason for your choice?)

1 Mother
2 Father
3 Neither one

57. Compared to other children X was with as a child, how did his (her) punishment measure up to that of these others?
(IF SIBS NOT MENTIONED, PROBE: IF "OTHERS" NOT MENTIONED, PROBE)

A. Type of discipline
1 Same kind
2 Different kind

B. Amount of discipline
3 More
4 Same amount
5 Less

58. Thinking now about children in general today, do you feel they are receiving as much control from their parents as they should be? (Why do you suppose you would say this?)

59. Since leaving childhood and entering his (her) teens, would you say managing X has become more difficult, or what?

1 More difficult
2 Less difficult
3 About the same

60. As you think back, what were some of the instances in which you and your husband disagreed about the way in which you should bring up X?

61. Have there been any authorities with advice for parents that you have thought particularly good, such as authors, child training experts or groups of one kind or another?

1 No
2 Yes

62. We all know that being a parent takes up a lot of our time and energy so that we often don't get to do many of the things we might have. . .but, if you hadn't had any children, what are some of the things you might have done?

63. We've spent some time now, discussing X. May we now turn for a moment to yourself and the family from which you came? To begin with, How would you describe the home you lived in as a child?

64. If you were to compare X's expression of affection for you as a parent with the family situation in which you were brought up, what would you say about it?
(Does X feel toward you differently from the way you felt toward your parents, or the same?)

1 My child expresses more to me phsically than I did

2 My child expresses more to me emotionally than I did

3 About the same for both of us

4 I expressed more physically to my parents than my child does

5 I expressed more emotionally to my parents than my child does

65. How close are your family's relations with relatives like X's grandparents, X's aunts and uncles, and more distant relations?

A. Grandparents

1 Not close or mildly
2 Close but don't see often
3 Very close or see often

B. Aunts and uncles

4 Not close or mildly
5 Close but don't see often
6 Very close or see often

C. More distant

7 Not close or mildly
8 Close but don't see often
9 Very close or see often

66. In what ways do you celebrate family events like X's birthday, or your wedding anniversary, or different holidays during the year?

67. As far as recreation, vacations, and trips go since X started grade school, does your family spend a lot of time doing things together compared to other families you know?

68. Who has spent the most time in recreational activities with X, you or your husband?
(What type of things did (do) you do?)

A. Early life

1 Mother
2 Father
3 Both equally

B. More recently (since teens)

4 Mother
5 Father
6 Both equally

69. Looking back, do you feel there are any aspects of your youth that X seems to be missing in his (hers)--or vice versa?

1 X missing something

2 Mother missed something

70. What's your feeling about qualities that are important for a person to possess. . .comparing the world you grew up in with X's world today?
(Why do you suppose this is so?)

(NO MATTER HOW LONG OR SHORT THE INTERVIEW, RECORD THESE ITEMS)

What magazines and newspapers do you subscribe to or buy regularly?

What magazines and newspapers do you read just once in a while?

Regular:

Sometimes read:

_________ Next, if not obvious, do you have a TV set? Yes___No___

If Yes, How much do you use it and what do you watch?

_______ Next, what kinds of social activities do you take part in, including church, clubs, organizations and so forth? (parents not children)

Can you give me an idea of how often you do these things?

| Types of Activities | Frequency |
|---|---|

Finally, if you've moved within the past five or ten years, where did you move from?

1 Past five years
2 Past ten years

What kind of a house and neighborhood did you have there? (GET RESPONDENT TO DESCRIBE IT, EVEN IF IT IS AREA WITH WHICH BOTH RESPONDENT AND INTERVIEWER ARE FAMILIAR).

3 Last move:

4 Before that:

_______ And last, how many live here, and how many rooms have you, excluding kitchen and bath?

___ Number of occupants

___ Number of rooms

________ SOCIAL DATA CODE________

(TO BE COMPLETED BY INTERVIEWER ON BASIS OF HIS OWN OBSERVATION)

Area lived in:

1 Select residential area of highest repute in community.
2 Better suburban & apartment house areas (homes with large grounds).
3 Preferred residential areas, adequate grounds; good apartment buildings.
4 Residential neighborhoods with no deterioration; reputed to be average.
5 Area beginning to deteriorate; business/industry entering it.
6 Area considerably deteriorated, but not a slum area; depreciated repute.
7 Slum area of the community; neighborhood in bad repute.

Street on which residence located:

1 Business street
2 Street with car tracks
3 Bus line on street
4 Street not too well-kept but has grass strips and shade trees
5 Street well-kept with grass strips and shade trees.

House Type:

1 Apartment
2 House (detached)
3 Two-family unit (duplex or two-story)
4 Other (specify)

Condition of living area:

A. Exterior
0 Perfect
1 Good
2 Medium
3 Poor or bad
4 Very bad

B. Interior
5 Perfect
6 Good
7 Medium
8 Poor or bad
9 Very bad

Description of Interior (rooms in or could be seen by interviewer):

Ratings:

| Neatness | Expense | Culture |
|---|---|---|
| 1______ | 1______ | 1______ |
| 2______ | 2______ | 2______ |
| 3______ | 3______ | 3______ |
| 4______ | 4______ | 4______ |
| 5______ | 5______ | 5______ |

Furnishings (including drapes, rugs, curtains, etc.)

Magazines, books and pictures, etc. visible:

Other aspects of family life visible (art, musical instruments, bird cages, family dog or cat, etc.)

Impressions of the Interviewee:

Physical description (rating and behavior description):

Appearance:

1
2
3
4
5

Verbalization:

1
2
3
4
5

Social Grace:

1
2
3
4
5

**Personality Type: (rating and behavior description):**

**Responsiveness:**
**Warmth:**

1
2
3
4
5

**Reactiveness:**

1
2
3
4
5

**Anxiety Level:**

1
2
3
4
5

**Organization of self re: present and future:**

1
2
3
4
5

**Personal Themes (including behavior descriptions):**

**Any other pertinent comments or additions:**

## Appendix C

## SUPPLEMENTARY PROCEDURES

All of the instruments reproduced in Appendices A and B were central to the identification and examination of the four experimental groups and have been briefly described in the main body of the report. The instruments and rating scales to be described here were peripheral to the major focus of the research. These assessment devices served three major functions: 1) as sources of supplementary information to be used in the clinical studies; 2) as additional components in the correlation matrices, serving to clarify some of the relationships among our major instruments; and 3) as the foci of independent studies tangentially related to the topic of giftedness. Following are brief descriptions of all the instruments; those designed especially for this study are reproduced in full.

Activities Questionnaire

Description and rationale. This instrument consists of 275 items, each describing a different activity which may be responded to in one of four ways: a) I have engaged in this activity within the last seven days; b) I have engaged in this activity in the past, but not in the last seven days; c) I have never engaged in this activity, but I would like to try; d) I have never engaged in this activity and I would not like to try.

The items, most of which were suggested in interviews with adolescents, ranged from unusual activities, such as "take flying lessons," to common, everyday behavior, such as "watch TV." Although the list is far from exhaustive, the range of activities was made as wide as possible.

Embedded among the 275 items are 11 items describing "fake" activities (e.g., "talk to a Binodian," "play skooster," "work at tusgeonics," "try to play kousteria,"). A "c" response (I have never engaged in this activity, but I would like to try) to these items was interpreted as an expression of "extreme curiosity," i.e., the willingness to engage in activities about which nothing could possibly be known.

In the beginning of the instrument are 55 items representing activities that do not require a great deal of effort or personal involvement on the part of the participant (e.g., "attend a party," "set the table," "polish shoes," "send a greeting card " ). Most of these activities require a relatively low level of skill and do not demand a heavy investment of either time or energy. In the scoring of the instrument these 55 items are referred to as "passive activities."

Toward the end of the instrument are 55 items representing activities that do require a great deal of effort or personal involvement on the part of the participant (e.g., "organize an assembly program," "repair a car engine," "teach a friend something about art."). Most of these activities require a relatively high level of skill and heavy investment of either time or energy. In the scoring of the instrument these 55 items are referred to as "active activities."

Time allowance. Students required approximately 40 minutes to complete their responses, although no specific time allowance was mentioned in the instructions.

Scoring. Eight scores are derived from a student's responses to the Activities Questionnaire. Four of these refer directly to the response alternatives available to the subject. The remaining four concern particular responses given to particular items. The scores are as follows:

A score - the number of times response "a" is chosen ("I have engaged in this activity within the last seven days").

B score - the number of times response "b" is chosen ("I have engaged in this activity, but not in the last seven days").

C score - the number of times response "c" is chosen ("I have never engaged in this activity, but I would like to try").

D score - the number of times response "d" is chosen ("I have never engaged in this activity, and I would not like to try").

E score - the number of "a" and "b" responses to the first 55 items (active items).

F score - the number of "a" and "b" responses to the last 55 items (passive items).

G score - the number of "c" responses to the 11 ficticious items (curiosity score).

H score - the ratio of the F/E subscores, i.e., the active item score divided by the passive item score.

Discrepancy Score (Direct Sentence Completion minus Indirect Sentence Completion)

This score was the numerical difference between the student's score on the Direct Sentence Completion Test and his score on the Indirect Sentence Completion Test. (These instruments are described in Chapter 2). The score was originally designed to reflect the discrepancy between manifest and latent levels of response.

General Opinionnaire.

This is an omnibus instrument consisting of 75 items from which the following separate scores are obtained: "Creative attitutdes," "Energy Level," "Sense of Humor," "Parental Control," and "Stredtbeck's V-Score." The Stredtbeck V-Score was described in Chapter 2; the remaining four scores are described below.

Creative Attitude Scale. This scale consists of 17 questions designed to assess the possession of attitudes characterizing the "creative" person. The statements contained in the scale were suggested by a reading of the selections contained in Shiselin's The Creative Process (1952). An informal content analysis was made of these writings and a number of personal qualities that appear to characterize creative people were identified. From this analysis a series of attitude statements were constructed. Examples are presented below, each followed by the response judged to be "correct."

I frequently have periods when I get lots of new ideas. Yes.

If you are in doubt it is best to leave well enough alone. No.

Sometimes I feel I will do something really out of the ordinary. Yes.

When I get stuck with a problem I forget about it, do something else, and return to it later. Yes.

A student's score was the number of "correct" answers he gave to the 17 items.

*Energy Level Scale*. This instrument consists of 14 questions of the type found in personality inventories. Sample items are:

> When climbing stairs do you often take the steps two at a time?
>
> Are you happiest when you get involved in some project that calls for rapid action?
>
> Do you usually eat more rapidly than the average person, even though there is plenty of time?

Eleven of the 14 items were taken from the *Guilford-Martin Inventory of Factors GAMIN*;[1] the remaining 3 were made up especially for this questionnaire. A student's score was the number of questions to which he gave a response indicating a high energy level.

*Sense of Humor Scale*. This instrument consists of 16 questions designed to assess the student's interest in, and response to, humor. Sample items are:

> Do you often find yourself laughing at jokes that others don't think are particularly funny?
>
> If you had your choice of seeing two movies, one a comedy and the other a serious story, would you go to see the serious story?
>
> Does your laugh frequently start other people laughing?
>
> Do people consider you to be a serious, as opposed to a light-hearted person?

A student's score was the number of questions to which his response indicated an enjoyment of or preference for humorous behavior.

*Parental Control Scale*. This instrument consists of 12 questions, each related to the amount of parental control the student experiences or has experienced. Sample items are:

---

[1] Published by the Sheridan Supply Co., Beverly Hills, California.

Do you have to account to your parents for the way you use your money?

Is there a special time set aside at home for you to do your homework?

Have your parents punished you during the past year for coming home too late?

When you go out for a while in the evenings, must you let one of your parents know where you are going?

A subject's score was the number of questions to which he gave a response indicating the presence of parental supervision.

## Gestalt Completion (Objective-Analytic Test G2)

This test, which is part of Cattell's Objective-Analytic Battery, contains incomplete pictures of 24 common objects. The student's task is to identify the objects and write their names under the paictures. He is given 2½ minutes to complete this task. Two scores are obtained; one representing _speed_, the other, _accuracy_. The speed score is the total number of correct answers given in the time limit. The accuracy score is the total number of correct answers divided by the total number of items attempted.

## Group Rorschach

Cards III, IV, IX, and X were projected on a screen for two minutes each. For each picture the student was presented with 10 responses and was asked to choose the three which he thought to be most appropriate. Each list of 10 contained four "pathological" responses. The student's score was the number of non-pathologic responses among his 12 choices. This group technique follows that described by Harrower-Erickson and Steiner (1945).

Individual Choice Questionnaire

This instrument is designed to assess the adequacy and appropriateness of goal-oriented behavior, and is composed of two parts. Part I contains 20 short episodes describing the actions of two individuals. The student is to choose the person in each story who behaves most like he (the student) would under similar circumstances and also to indicate how certain he is of his choice. Boys' names appear in the boys' form of the test, and girls' names in the girls' form. The following are two examples taken from the girls' form:

> When Kate and Julie are in a crowd of friends and a decision is to be made, Kate likes to keep quiet until most of the other people have spoken and then she decides which of the ideas she likes best. Julie offers her opinions without waiting for what others have to say even though she knows her ideas may often be rejected.
>
> I would behave most like Kate____; Julie____.
>
> Certainty of choice:
>
> | | | | | | |
> |---|---|---|---|---|---|
> | Very certain | Quite certain | Fairly certain | Fairly uncertain | Quite uncertain | Very uncertain |
>
> Betty and Jean like to read books and both are rapid readers. Betty likes to stick with one book until she has finished it. She generally knows exactly which book she wants to read next. Jean generally has four or five books started at one time. She is quite likely to decide to read a book on the spur of the moment if it looks interesting.
>
> I would behave most like Betty___; Jean___.
>
> Certainty of choice:
>
> | | | | | | |
> |---|---|---|---|---|---|
> | Very certain | Quite certain | Fairly certain | Fairly uncertain | Quite uncertain | Very uncertain |

The scoring system takes into consideration both the correctness of the response and the certainty with which it was made. From 0 to 5 points (representing the six degrees of certainty) are added to the student's score when he makes a "correct" choice and subtracted when he makes an "incorrect" choice. In order to eliminate minus numbers 100 is added to all scores.

The second part of the Individual Choice Questionnaire consists of 29 questions, each involving a choice of some kind. To each to which the student responds by indicating how much thought he has given that choice before today ("a lot," "a little," "none") and by estimating how much time it would take him to make a decision if he were offered the choice today ("immediately," "a few minutes," "a few days," "longer than a few days"). Below are some sample items from the instrument.

> If you had your choice, what occupation would you like to enter as an adult?
>
> If you could be like anyone you know about, whom would you choose to be like?
>
> If you could lose one particular habit you have today, which one would it be?
>
> If you could not have your first choice of an occupation, what would be your second choice?

The major assumption behind this instrument is that the person with a well-defined goal structure will have given considerable thought to questions of this type and would be able to make the called-for decisions in a relatively short period of time.

Responses indicating the amount of thought given each item are scored from 1 to 3 ("never" to "a lot") and those indicating the amount of time required to make the decision are scored from 1 to 4 ("longer than a few days" to "immediately"). Total scores are obtained by multiplying the scores on these two scales and summing these products over the 29 questions.

Appearance Ratings

During the general testing sessions each student was rated by six judges on appearance or "good looks." Each student was given a rating of 1 (inferior), 2 (average), or 3 (superior). The ratings were assigned proportionately so that each judge gave a rating of 1 to approximately 20 per cent of the students in a class and a rating of 3 to another 20 per cent. The ratings of the six judges were summed and averaged for each student to yield a "bet" estimate of appearance.

Athletic Ratings

The physical education faculty in the school ranked the children in each class (separately by sex) on the basis of their subjective estimate of the athletic ability of each child. The ranked data were then transformed to T-scores so that comparisons could be made across groups.

Physical Health Ratings

Health ratings of all the students were made by the school physician. A rating sheet, designed to aid the physician in her judgment of each child, was used to summarize information from the student's medical history folder. Of particular relevance was information concerning:

1. Physical handicaps
2. Occurance of serious diseases
3. Occurance of major surgery or serious accidents
4. Greater than average number of absences from school for medical reason
5. Medical excuses from physical education

On the basis of the information on the rating sheet and her own personal knowledge of the children, the physician rated each student on an 8-point scale. To ensure a relatively symetrical distribution of students within each class, the eight scale points were assigned on a percentage basis using the following distribution:

| Scale point | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Percentage of students receiving that scale value | 5 | 8 | 17 | 20 | 20 | 17 | 8 | 5 |

The role that the physician's personal knowledge of each student played in her assignment of ratings cannot be over-emphasized. Children who looked rather similar on the basis of their ratings sheets often received widely different ratings depending upon the physician's judgment of the severity of their difficulties.

## ACTIVITIES QUESTIONNAIRE

DIRECTIONS: On the following pages are listed a number of activities that you may or may not have done. Those you have never done you may or may not be interested in doing at some future time. On the special answer sheet, respond to each of the activities by marking one of four columns:

Mark Column A if your have done this activity in the past seven days.

Mark Column B if you have done this activity at one time but not in the past seven days.

Mark Column C if you have never done this activity but think that you might like to try it sometime in the future.

Mark Column D if you have never done this activity and think that you would not like to try it sometime in the future.

Be certain to mark one letter for each item. Do not omit any items. Do not make any marks on this booklet.

Before you begin, please write your name, your grade, and the date on the answer sheet. Write your grade and the date in the space for "Name of the Test."

1. Attend a party
2. Clean own room
3. Play Parchesi or backgammon
4. Take lessons in social dancing
5. Go to art classes
6. Work part time after school
7. Listen to hit parade songs
8. Drive a car
9. Read a movie magazine
10. Work a crossword puzzle
11. Do calisthenics or setting up exercises
12. Attend a religious service
13. Wash dishes
14. Play checkers
15. Take lessons in reading music
16. Criticize a piece of art
17. Work with or for father
18. Listen to the opera on radio or TV
19. Collect movie star pictures
20. Read a detective novel
21. Play anagrams
22. Listen to a sports events on TV or radio
23. Visit a boy or girl who lives far away
24. Polish shoes
25. Play cards
26. Learn to play a musical instrument
27. Present a puppet play
28. Work when school is out of session
29. Listen to music which I can whistle to
30. Play with a model railroad
31. Read a scandal magazine
32. Write a thank-you note
33. Officiate or keep score at an athletic event
34. Talk with friends
35. Set table
36. Watch movies on TV
37. Go to a modeling school
38. Look at pretty pictures
39. Chew gum
40. Sing in school or church choir
41. Play with dolls or doll house
42. Read a comic book
43. Send a greeting card
44. Participate in sports for fun and to let off steam
45. Have a long phone conversation with a friend
46. Dust
47. Pin tail on donkey
48. Take driving lessons
49. Paint in water colors
50. Keep a diary

51. Listen to progressive jazz
52. Collect autographs
53. Read a bestseller
54. Try to write for money
55. Watch some athletic event in school
56. Talk to a Binodian
57. Knit, Crochet or Embroider
58. Keep a scrapbook
59. Take lessons in archery
60. Draw a cartoon
61. Submit article for publication
62. Play music with comb and paper
63. Build a work shop
64. Read an editorial
65. Write a limerick
66. Go boating
67. Go to a dance
68. Crystal Cracking
69. Drop clothes pins in the bottle
70. Take lessons in riflery
71. Make a design from pieces of paper and/or felt
72. Write something to be published in future
73. Make a xylophone out of water-filled bottles
74. Trace designs or patterns on wood or glass
75. Read a gossip column
76. Write in a foreign language
77. Play soccer
78. Attend a boy scout or girl scout meeting
79. Arrange flowers
80. Play skooter
81. Take business courses in business school
82. Draw an illustration of a favorite story
83. Coach or tutor someone
84. Teach dancing
85. Mold clay into molds
86. Read the letters-to-the-lovelorn column
87. Learn how a library works
88. Swim
89. Stay overnight with a friend
90. Make potholders
91. Play charades
92. Take lessons in oriental prading
93. Make a print by using wood or linoleum blocks
94. Design and/or build own laboratory
95. Do choreography
96. Develop and print pictures
97. Read a play
98. Build up a vocabulary
99. Fish
100. Go on a hayride

101. Take care of a child or children

102. Play post office

103. Take swimming lessons

104. Make a sketch in risulin grease

105. Test a friend for ESP

106. Play recorder

107. Take pictures

108. Read a how-to-do-it book

109. Work on student newspaper

110. Hunt

111. Form a secret club

112. Take care of a pet or pets

113. Play monopoly

114. Take tennis lessons

115. Sculpt

116. Work at tusgeonics

117. Sing in a religious service

118. Collect butterflies or insects

119. Read about life on other planets

120. Enter newspaper word contest

121. Play baseball

122. Interview people

123. Cook

124. Go bike riding

125. Take water-skiing lessons

126. Carve wood

127. Try to teach myself a foreign language

128. Play in a band and/or orchestra

129. Mix paints and get new colors

130. Read about recent medical discoveries

131. Write script for a school assembly

132. Play basket ball

133. Visit a sick friend

134. Lay linoleum or tile

135. Play chinese checkers

136. Lessons in fancy diving

137. Carve soap

138. Go to a religious service

139. Do coronado fingerings

140. Build molecular garretts

141. Read about ancient civilizations

142. Write a pen pal in a foreign country

143. Play badminton

144. Work on a committee

145. Work in the garden

146. Play hopscotch

147. Learn to play harpsichord

148. Sketch with charcoal

149. Attend a school or club for religious purposes

150. See a live musical

151. Repair electrical appliances
152. Read about the life of Binodes
153. Read a book on grammar not assigned in school
154. Play football
155. Join a club
156. Run an errand
157. Take a walk in the park
158. Learn to play flute
159. Make a model of a building, airplane, car, or train
160. Actively participate in religious services
161. Listen to a concerto
162. Make artificial flowers and fruit from wax
163. Read a book or article about new kind of games and puzzles
164. Try to play kousteria
165. Play tennis
166. Have an overnight guest
167. Do family shopping
168. Play hide and seek
169. Take a course in art at art school
170. Work in ceramics
171. Study something complicated in mathematics
172. Listen to a chorale
173. Soup up a car
174. Read a book about inventions
175. Write a fairytale
176. Compete at skrump
177. Attend school athletic event
178. Buy own clothes
179. Skate
180. Take speech lessons
181. Sketch in chalk or pastels
182. Amateur radio transmission
183. Listen to a string quartet
184. Throw pottery or sculpt in clay
185. Read a book on how to read
186. Play scrabble
187. Box
188. Attend school social event
189. Scrub floors
190. Skip
191. Private lessons in a foreign language
192. Sketch in pen or pencil
193. Tinker with an amateur radio set
194. Strum a guitar
195. Make designs for use on glass or wood
196. Read in a particular subject
197. Make up a code for sending messages
198. Wrestle
199. Go to a masked ball
200. Arrange corner boards

201. Play go
202. Take water ballet lessons
203. Build a mobile
204. Study weather
205. Work on a serious musical composition
206. Solder and/or work with metal
207. Read to develop a particular skill or talent
208. Learn esperanto
209. Go skindiving or aqualunging
210. Fall in love
211. Weave a piece of material
212. Fight with someone
213. Take lessons in diving
214. Paint in casein
215. Make maps
216. Play two or more musical instruments
217. Design own clothes
218. Read a review of art and/or a musical event
219. Work on a history or social science book
220. Go ski joring
221. Go on a date
222. Put up screens or storm windows
223. Do a headstand and/or a handstand
224. Take flying lessons
225. Paint in oil
226. Watch birds
227. Attend symphony and/or operatic performance
228. Build a doll house or make clothes for dolls
229. Read sports page
230. Write a poem
231. Play on the varsity
232. Work for a charity organization
233. Beat a rug
234. Fly a kite
235. Take dramatic lessons
236. Look at paintings of Old Masters
237. Invent or design scientific equipment
238. Listen to Hi-Fi symphonic music
239. Build cars and scenery for model railroad
240. Read articles about young people
241. Write a play
242. Lead cheers for a team
243. Become an officer in a club
244. Mow the lawn
245. Jump or flip over a fence
246. Teach playing of musical instrument
247. write plays for puppets
248. Conduct an experiment outside of class
249. Sing professionally
250. Collect rare stamps and coins

251. Read a work by a great humorist

252. Write a novel

253. Announce and analyze a sports event
over radio or TV

254. Organize an assembly program

255. Clean the wallpaper

256. Climb a tree

257. Take lessons in harmony

258. Create a new art form

259. Breed animals

260. Try to write a music drama

261. Repair a car engine

262. Read a classic

263. Make up a crossword puzzle

264. Attend a favorite sports event
outside of school

265. Plan a party

266. Wash the ceiling

267. Skate

268. Take lessons in ballet

269. Teach a friend something about art

270. Dissect a dead animal

271. Read music well enough to follow
a score as played

272. Collect snakes

273. Read a scientific journal and/or
magazine

274. Make up an anagram

275. Lift weights and barbells

## GENERAL OPINIONNAIRE

The items of this questionnaire are designed to find out how you feel about several general problems. The test is in three parts. Follow the directions of each part carefully, and make all your answers on the special answer sheet which is provided. Do not make any marks on this booklet.[1]

---

[1] The letters following each item in Part I identify the particular scale to which the item belongs. These did not appear on the instrument when it was administered to students. The letter designations are: (E) = Energy Level; (H) = Sense of Humor; (PC) = Parental Control; (F) = "Filler" items that were not scored. Part II of the instrument contained the Strodtbeck V-Score items which are reproduced in Appendix B and are omitted here. All of the items in Part III comprise the Creative Attitude Scale.

Part I: Each of the following questions can be answered Yes or No. On the answer sheet, cross out (x) the letter Y if you wish to answer Yes and the letter N if you wish to answer No. Do not omit any items.

1. When climbing stairs do you often take the steps two at a time? (E)*
2. Do you often find yourself laughing at jokes that others don't think are particularly funny? (H)
3. Do you have to accountto your parents for the way you use your money? (PC)
4. Are you inclined to be quick in your actions? (E)*
5. Do you frequently laught so hard that tears come to your eyes? (H)
6. Is there a special time set aside at home for you to do your homework? (PC)
7. Are you happiest when you get involved in some project that calls for rapid action? (E)*
8. If you had your choice of seeing two movies, one a comedy and the other a serious story, would you go to see the serious story? (H)
9. Have your parents punished you during the past year for coming home too late? (PC)
10. Are you inclined to be slow and deliberate in movement? (E)*
11. Do you often smile at things that do not seem to be amusing to other people? (H)
12. When you leave the house at night on weekdays, do you have to promise to be back at a certain time? (PC)
13. Do you usually eat more rapidly than the average person, even though there is plenty of time? (E)*
14. When someone plays a joke on you do you frequently find it difficult to see anything funny in it? (H)
15. Is there a regular policy in your home for someone to check over your homework every day or almost every day? (PC)
16. When you are walking with others, do they often have difficulty in keeping up with you? (E)*
17. Do you frequently find yourself chuckling when you think of something funny that happened in the past? (H)
18. Would you be allowed to go out at night if your parents knew you had not finished your homework? (PC)
19. Do you often find yourself hurrying to get places even when there is plenty of time? (E)*

*All of the "Energy Level" items followed by an asterisk were originally part of the Guilford Inventory of Factors GAMIN, published by the Sheridan Supply Co., Beverly Hills, California

20. Have you ever tried to write a funny story or poem? (H)

21. When you go out for a while in the evenings, must you let one of your parents know where you are going? (PC)

22. Do you tend to prefer quiet rather than exciting amusements? (E)*

23. Does a cartoon or comic strip remain amusing to you after you have read it two or three times? (H)

24. Have your parents ever used physical punishment (that is, slapping or whipping) to discipline you? Cross out Yes or No for (24), (25), and (26). (PC)

24. Since you started school.

25. Since you were 9 years old.

26. Within the last year.

27. Are you inclined to go from one activity to another without pausing for rest? (E)*

28. Do other people consider you a person with a good sense of humore? (H)

29. When you are invited to a relative's home for a visit and you tell your parents you have somewhere else you would rather go, do they usually insist that you go with them anyway? (PC)

30. Do you often feel bubbling over with excess energy? (E)*

31. Do you often repeat funny stories that you have heard to your friends? (H)

32. Do you sometimes feel blue when you get up in the morning? (F)

33. Do other people regard you as a lively individual? (E)*

34. Does your laugh frequently start other people laughing? (H)

35. Do you sometimes cross the street to avoid meeting someone? (F)

36. Are you often in a hurry? (E)

37. Do you consider yourself to be a person with a better than average sense of humore? (H)

38. Do you usually know what you are going to buy when you start on a shopping trip? (F)

39. Do people consider you to be rather quiet? (E)

40. Do you often seem to say humorous things without even trying to do so? (H)

41. Do you usually get your homework done on time? (F)

42. Do you usually work fast? (E)

43. Are you the kind of person who tends to see the funny side of things? (H)

44. Do you often try to persuade others to your point of view? (F)

45. Do you frequently have to force yourself to laugh at other people's jokes? (E)

46. Do you do many things together with your brothers and sisters? (F)

47. Are there ever times when you wonder what life is all about? (F)

48. Do people consider you to be a serious, as opposed to a light-hearted person (H)

Part III; Each of the following items are to be answered Agree or Disagree.

57. I do my best thinking when I am around people.

58. I think of myself as a sort of average person.

59. At times I feel that a lot of things in school have no real meaning.

60. I think that the best things in life will happen to me at some future time.

61. I think there is one absolute code of morals by which all men can be judged.

62. I frequently have periods when I get lots of new ideas.

63. We should try to get the opinions of authorities on the important things of life.

64. People should try to lead the same kinds of lives as their parents.

65. If you are in doubt it is best to leave well enough alone.

66. Sometimes I feel I will do something really out of the ordinary.

67. There is a famous person I would like very much to be.

68. Mathematics and reading are my best subjects.

69. I would like to be as good a person as my father was.

70. When I get stuck with a problem I stick it through to the bitter end.

71. Every once in a while I just stop and wonder what it is about.

72. I have already decided what my future work will be.

73. When I get stuck with a problem I forget about it, do something else, and return to it later.

74. I regret more the things I didn't do than the things I did which turned out to be wrong.

75. Occasionally I suddenly find myself wondering what I am doing and if it means anything.

76. More progress comes about from improving on established methods than from asking new kinds of questions.

# WHAT DO YOU SEE?

**Name**______________________________________**Grade**______**Date**______________

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO**

## PART I[1]

**Instructions**: You are going to see some pictures on the screen. You will have the opportunity to study the picture for 30 seconds, at which time the picture will go off. After that, you will have two minutes to write down in the spaces below whatever you imagine the picture to be. You will probably imagine several things; write down as many things as you can.

Picture 1.

Picture 2.

Picture 3.

Picture 4.

DO NOT TURN THE PAGE UNTIL YOU ARE TOLD TO DO SO

---

[1] The four pictures correspond to Rorschach inkblots numbered 3, 4, 9, and 10.

## PART II[1]

Instructions: You are going to see the same pictures that you saw before, but this time you will have two minutes to study them. For each picture you will find a list of things which the picture might remind you of; you should check (√) in the spaces provided the three things in each list which you think best fits the picture. In addition, several blank spaces are provided at the end of each list in which you may add new things that you did not see before; under no circumstances should you add these new things to your responses to Part I. After the fourth picture has been shown, please answer the general question at the bottom of the page.

---

Picture No. 1
(check 3)

____ Two birds fighting
____ Meat in a butcher's shop
____ Two waiters bowing
____ A bloody stomach
____ Blood and dirt
____ A colored butterfly
____ Lipstick blotches
____ Monkeys hanging
____ A red bow tie
____ Two cannibals
____
____
____

Picture No. 2
(check 3)

____ Two little snakes
____ Lungs and chest
____ A nasty, dirty mess
____ A pair of boots
____ A burnt mass
____ An X-ray picture
____ A giant in a fur coat
____ A fur rug
____ A big gorilla
____ A man sitting down
____
____
____

Picture No. 3
(check 3)

____ Sea horses
____ Just spilt paint
____ Two Santa Clauses
____ Stomach and intestines
____ An explosion
____ Deer or horns of deer
____ A candle
____ Two witches
____ Bloody clouds
____ A pink jacket
____
____
____

Picture No. 4
(check 3)

____ A Chinese print
____ Spilt paint
____ Two ladies holding hands
____ An X-ray picture
____ Just colored ink spots
____ Spiders, caterpillars, insects
____ Parts of my insides
____ A colored map of California
____ A flower garden
____ A design for wallpaper
____
____
____

Which picture did you like best? (check one) ____No. 1, ____No. 2,
____No. 3, ____No. 4.

---

[1] This is a modified version of a Multiple Choice Rorschach Test described by Halcomes and Steiner (1951, pp. 221-227).

**BOYS FORM**

## THE INDIVIDUAL CHOICE QUESTIONNAIRE: PART I

### FORM I

LAST NAME ______ FIRST NAME ______ GRADE ______ DATE ______

**DIRECTIONS:** Below are a set of short episodes, each involving two individuals. The persons involved in each of the episodes have much in common, yet their actions differ. You are to decide which of the individuals behaves most as you would do in a similar situation. Obviously, if you were faced with the situation in real life your behavior might be very unlike either of the two persons. Nevertheless, you are to decide which action most closely resembles the way you would behave.

Following each description place a check beside the name of the person whose behavior is most like your own. Also, circle the one term (Very certain Quite certain Fairly certain Fairly uncertain Quite uncertain Very uncertain) which indicates how certain or uncertain you are of your choice.

---

1. Bob and Jim have decided to go swimming. On their way to the beach, they suddenly remember that an assignment is due tomorrow. Since the assignment will not take a long time to finish, Bob decides to go swimming and then to work on his assignment as soon as he gets home. Jim decides to go back home to do his assignment right away and to go swimming later.

   A. I would behave most like Bob___; Jim___.

   B. Certainty of choice:

   Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

2. Bill and Joe have had the same problem assigned to them in school. Although neither of them was interested in it in the beginning, they both became interested after a few minutes work. They are both eager to find the answer. After they have worked for about fifteen minutes, the teacher interrupts them and says that she will show them how to solve the problem. Bill asks her not to give the answer now since he wishes to solve the problem for himself. Joe wants the teacher to show him how to do it since he will then be free to do other things.

A. I would behave most like Bill___: Joe___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

3. Paul and David both go to a record store to buy a specified record. When they arrive at the store they find that the record they wanted is no longer being made; Paul says that although he did want the record he is ready to buy a different one. David says that his mind was made upon that record, therefore, he has to think of what to do now.

A. I would behave most like Paul___; David___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

4. Frank and Tom have chosen to enter the same occupation. From time to time their friends attempt to recommend other occupations to them. Frank listens attentively to these recommendations and generally responds by pointing out the advantages of his choice. Tom rises to the challenge of justifying his choice by pointing out the particular disadvantages of the other occupations.

A. I would behave most like Frank___; Tom___.

B. Very certain   Quite certain   Fairly certain   Fairlly uncertain   Quite uncertain   Very uncertain

5. George and Fred went to the movies and took seats next to each other. When the show was over George commented that he had hardly been able to concentrate on the film because of two people who were talking behind them. Fred declared that he had been so interested in the film that he did not even hear them talking.

A. I would behave most like George___; Fred___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

6. When Sam and Jeff are in a crowd of friends and a decision is to be made, Sam likes to keep quiet until most of the other people have spoken and then he decides which of the ideas he likes best. Jeff offers his opinions without waiting for what others have to say even though he knows his ideas may often be rejected.

6. response

A. I would behave most like Sam___; Jeff___.

B. Very certain Quite certain Fairly certain Fairly uncertain Quite uncertain Very uncertain

7. Harry and Mike like to read books and both are rapid readers. Harry likes to stick with one book until he has finished it. He generally knows exactly which book he wants to read next. Mike generally has four or five books started at one time. He is quite likely to decide to read a book on the spur of the moment if it looks interesting.

A. I would behave most like Harry___; Mike___.

B. Very certain Quite certain Fairly certain Fairly uncertain Quite uncertain Very uncertain

8. Bud and Jack have been asked to describe the type of job they would like to have. Bud says that he can put up with poor working conditions and just an average salary if the job is fairly interesting. Jack says that if the working conditions and salary are tops he can put up with a job that is not too interesting.

A. I would behave most like Bud___; Jack___.

B. Very certain Quite certain Fairly certain Fairly uncertain Quite uncertain Very uncertain

9. Henry and Mack decide to go downtown for shoes. Henry suggests that they should decide beforehand what style of shoes to buy. Mack claims that he would rather make the decision after he tries many styles of shoes on.

A. I would behave most like Henry___; Mack___.

B. Very certain Quite certain Fairly certain Fairly uncertain Quite uncertain Very uncertain

10. Both Phil and Jerry like to solve puzzles. When Phil succeeds in solving one he generally likes to show it to friends, particularly to those who tried to solve it earlier and were not successful. Jerry generally turns to another puzzle immediately without bothering to talk about the one he has solved.

A. I would behave most like Phil___; Jerry___.

B. Very certain Quite certain Fairly certain Fairly uncertain Quite uncertain Very uncertain

11. Ed and Glen have an interview with their school vocational counselor during the first few weeks of their senior year. Ed tells the counselor that he knows what he wants to become but he would appreciate some information on how to achieve his goal. Glen tells the counselor that there are a lot of things he would like to become and that he needs help in choosing from among them.

A. I would behave most like Ed___; Glen___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

12. In their senior English class Dick and Harold are assigned essays to write. Dick chooses to write on some of the things which happened to him during the last four years of school. Harold chooses to write on some of the things which he hopes to do in the four years to come.

A. I would behave most like Dick___; Harold___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

13. Ted and Larry like to read books. Ted is willing to read a book that is only slightly interesting to him if he feels that it is one of those books that everyone should read. He feels that when you have finished a book you should have gained something more than enjoyment. Larry chooses to read only those books which interest him greatly. He feels that enjoyment is a good enough reason for wanting to read a book.

A. I would behave most like Ted___; Larry___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertaion

14. Barry and Cliff have just come out of a movie and have decided that they each liked the picture very much. They feel they ought to recommend the picture to a friend of theirs who has not seen it. On the way home they meet a group of their friends who have also seen the picture and who say that it was a poor picture not worth seeing. Since he respects his friends' opinions, besides, he cannot be positively sure of his own judgment anyway, Barry then decides not to recommend the picture as he had planned. Cliff decides to recommend the picture regardless of what they said.

A. I would behave most like Barry___; Cliff___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

15. Matt and Ken are each given a copy of the same magazine. Matt reads his issue from cover to cover, since there are very few things in which he is not interested. Ken reads those articles which are of particular interest to him and omits the others.

15. Response

A. I would behave most like Matt___; Ken___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

16. Pat and Hal are tacking part in a track meet. After watching their competition they both realize that they will probably not do better than third place in their respective races. Pat decides that he will begin his race with a burst of speed so that the school will lead the field for at least part of the way. Hal decides not to begin with a burst of speed since he does not want to run the risk of coming in behind third place.

A. I would behave most like Pat___; Hal___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

17. In their English class, Clark and Hugo are asked to give their favorite sayings. Clark's favorite is, "Shoot for the stars and you will at least hit the moon." Hugo likes, "You can keep your face turned skyward but your feet must be on the ground."

A. I would behave most like Clark___; Hugo___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

18. Ralph and John go downtown to the Loop to see a specific movie. When they find out that movie is no longer in that theater, Ralph says, "While we are here we might as well see another movie." John says, "Since we don't have that much money and time to spend on movies, let's wait until the movie we wanted to see comes to the neighborhood theaters."

A. I would behave most like Ralph___; John___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

19. Herb and Chris finish high school and wish to go to college. Neither has enough money to cover his expenses completely, so they take jobs playing with a local orchestra on weekends. At the end of their freshman year, they are spotted by the leader of a famous dance band who asks them to join his band as it tours the country. Herb decides to stay on at school even though he would like very much to accept the offer. Chris decides to go on the road with the orchestra even though he will be unable to begin college again in the Fall. He feels that the high pay and adventure are too good to turn down.

A. I would behave most like Herb___; Chris___.

B. Very certain   Quite certain   Fairly certain   Fairly uncertain   Quite uncertain   Very uncertain

20. Stand and Tim are each given ten dollars for their birthdays to spend on clothes. They both decide to buy a pair of shoes in the Loop. Stan decides to go to a large department store which will offer him a wide variety of shoes from which to choose. Tim decides to go to a smaller shoe store since he finds it easier to make a decision when there are only two or three models to choose from.

A. I would behave most like Stan___; Tim___.

B. Very certain Quite certain Fairly certain Fairly uncertain Quite uncertain Very uncertain

## INDIVIDUAL CHOICE QUESTIONNAIRE: PART II

### FORM I

DIRECTIONS: Throughout our lives we are presented with choices which allow us to decide what we want to do or to have. Sometimes we have thought of the choice before it comes our way; sometimes not. Sometimes we feel we know at once what our decision would be; sometimes not. There are no "rights" or "wrongs" about it. This is just the way things are.

Below are listed a number of statements which involve a choice of some kind. After each statement you will be asked two things: (1) How much thought you have given the choice before today; (2) How long it would take you to make a decision if you were offered the choice today. You should give your answer on the special answer sheet by crossing out certain letters as follows:

How much thought have you given the choice before today?

- a Have thought about this a lot.
- b Have thought about this a little.
- c Have never thought about this.

How long would it take you to make a decision if you were offered the choice today?

- w Could decide immediately.
- x Could decide in a few minutes.
- y Could decide in a few days.
- z Would need a longer time to decide.

For example, corresponding to the following items,

35. If you could have any book of your choice, what would it be?

36. If you could have anything you wanted, what would it be?

you would find the following on the answer sheet:

35. a b ~~c~~ w x ~~y~~ z

36. ~~a~~ b c ~~w~~ x y z

The student who has answered Item 35 indicates by crossing out the letter "c" that he has never, or almost never, thought about this question. He also indicates by crossing out the letter "y" that he would need a few days to make this decision if the choice were offered to him. Similarly, he indicates for Item 36 that he has thought a lot about the thing he wants most and could make the decision immediately.

When you are sure you understand the directions, turn the page and begin. Be certain to cross out two letters for every item, one from the a-b-c group and one from the w-x-y-z group. Be sure to place your name, grade, and the date on the answer sheet in the spaces provided.

1. If you could visit any one place in the world, which would it be?

2. If you had to choose between happiness and success, which one would you choose?

3. If you had to specialize in a single subject in school, which would it be?

4. If you had the chance to do a great favor for one person, who would it be?

5. If you had your choice, what occupation would you like to enter as an adult?

6. If you could solve one of the problems facing manking, which one would it be?

7. If you could live anywhere you chose, where would you want to live?

8. If you could go to any college, which one would you choose?

9. If you and your friends were sitting in a drugstore on Saturday evening with nothing to do, what would you suggest to the group?

10. If you could learn any skill you do not now have, which would it be?

11. If you were asked how you might improve your school work, what would you say?

12. If you were given some money to spend, what would you buy?

13. If you could have any pet which you do not now own, what would it be?

14. If you could choose any hobby you wanted, which one would it be?

15. If you could lose one particular habit you have today, which one would it be?

16. If you were allowed to give a party and invite any three people you wanted, whom would you invite?

17. If you had to begin training for the career of your choice, what steps would you take?

19. If you could study one subject which you are not now studying in school, what would it be?

20. If you had your choice, whom would you have sit next to you in class?

21. If you could have two days to do what you wanted, what would you do?

22. If you had to choose between the admiration of your close friends and the admiration of many people, which would you choose?

23. If you could play any musical instrument, which would it be?

24. If you could not have your first choice of an occupation, what would be your second choice?

25. If you were asked to list the qualities of a good teacher, what ones would you list?

26. If you could be like anyone you know about, whom would you choose to be like?

27. If you could change one aspect of your personal appearance what would it be?

28. If you could achieve outstanding success at a relatively early age, what goals would you head for next?

29. If you could have one wish come true, what would it be?

30. If you could have riches or fame, which would you choose?

## Appendix D

## CORRELATION MATRICES

In order to examine the relationships among the test variables for the total student population, two types of correlation matrices were produced, one based on T-scores, the other on raw scores. For the T-score matrices the scores within each sex and grade group (e.g., Freshman boys) on each variable were assigned a mean of 50 and a standard deviation of 10. Separate correlation matrices were produced for boys and for girls. Within each matrix the effect of the T-scoring procedure was to hold constant the "school grade" variable. Because chronological age is closely related to school grade, this procedure also tends to eliminate the effect of age differences in the correlation matrix. Thus, the coefficients within each matrix behave much as do first-order partial correlations with age held constant.

In addition to the two T-score matrices, 14 raw-score matrices were produced. These included two (boys and girls) for each of the six school grades, one for the total population of boys, and one for the total population of girls.

The variables and the numbers locating them in the two types of matrices are given below. The variables are presented in the order in which they were described in Chapter 2 and in Appendices A, B, and C.

| Name of Variable | Location of Variable | |
|---|---|---|
| | T-Score Matrices | Raw-Score Matrices |
| Word Association Test | 9 | 19 |
| Uses for Things | 8 | 18 |
| Hidden Shapes | 5 | 15 |
| Fables | 1 | 11 |
| Make-Up Problems | 4 | 14 |
| Intelligence Quotient | 31 | 41 |
| Personal Opinion Questionnaire | 18 | 4 |
| Do You Agree? | 17 | 3 |
| Descriptive Words | 19 | 2 |
| California Test of Personality: | | |
| Personal adjustment | 10 | 5 |
| Social adjustment | 11 | 6 |
| Total adjustment | 12 | 7 |
| Indirect Sentence Completion Test (The G-J-G Verbal Thinking Speed Test) | 40 | 36 |
| Direct Sentence Completion Test (The G-J-G Test of Behavior) | 39 | 35 |
| Do You Sometimes? | 16 | 1 |
| Verbal Achievement | 38 | 33 |
| Numerical Achievement | 37 | 34 |
| McClelland's Need:Achievement (N-A Test of Imagination) | 15 | 10 |
| Strodtbeck's V-Score | 35 | 31 |
| Activities Questionnaire: | | |
| A score | 20 | 20 |
| B score | 21 | 21 |

| Name of Variable | Location of Variable | |
|---|---|---|
| | T-Score Matrices | Raw-Score Matrices |
| C score | 22 | 22 |
| D score | 23 | 23 |
| E score | 24 | 24 |
| F score | 25 | 25 |
| G score | 26 | 26 |
| H score | 27 | 27 |
| Discrepancy Score (Direct Sentence Completion minus Indirect Sentence Completion) | 41 | 37 |
| General Opinionnaire: | | |
| Creative Attitude Scale | 2 | 12 |
| Energy Level | 34 | 30 |
| Sense of Humor | 33 | 29 |
| Parental Control | 32 | 28 |
| Gestalt Completion (Objective-Analytic Test G2) | | |
| Part I: Speed score | 6 | 16 |
| Part II: Accuracy score | 7 | 17 |
| Group Rorschach (What Do You See?) | 3 | 13 |
| Individual Choice Questionnaire | | |
| Part I | 13 | 8 |
| Part II | 14 | 9 |
| Appearance Ratings | 29 | 39 |
| Athletic Ratings | 28 | 38 |
| Physical Health Ratings | 36 | 32 |
| Year of Birth | 30 | 40 |

6

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 037 | -033 | 195 | 126 | -029 | -158 | 254 | 240 | 052 | 026 | 037 | -023 | 0 |
| 2 | | | -027 | 085 | 022 | -098 | -061 | 108 | 014 | -328 | -326 | -345 | -196 | -0 |
| 3 | | | | 109 | 049 | -032 | -048 | -074 | 012 | 067 | 141 | 125 | -037 | 1 |
| 4 | | | | | 224 | -009 | -183 | 195 | 419 | 106 | 150 | 129 | 138 | -0 |
| 5 | | | | | | 240 | 145 | 214 | 298 | 098 | 048 | 098 | 025 | -0 |
| 6 | | | | | | | 533 | 112 | 083 | 070 | 028 | 037 | 181 | 1 |
| 7 | | | | | | | | 075 | 028 | 085 | 017 | 050 | 115 | -0 |
| 8 | | | | | | | | | 397 | 051 | 003 | 031 | -074 | 0 |
| 9 | | | | | | | | | | 098 | 103 | 114 | 090 | 0 |
| 10 | | | | | | | | | | | 733 | 929 | 321 | 0 |
| 11 | | | | | | | | | | | | 917 | 336 | 1 |
| 12 | | | | | | | | | | | | | 343 | 1 |
| 13 | | | | | | | | | | | | | | 0 |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |

2

## T-SCORE MATRIX--BOYS (N = 245)

| (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 026 | 037 | -023 | 097 | 022 | 124 | -031 | 096 | -033 | -002 | 052 | -110 | 024 | 179 | -003 | 005 | -07 |
| -326 | -345 | -196 | -084 | 085 | 267 | 090 | 091 | -088 | -001 | 077 | 024 | -058 | -072 | 036 | 059 | 02 |
| 141 | 125 | -037 | 111 | 088 | -041 | 038 | 070 | 080 | -078 | 100 | 093 | -089 | 047 | -071 | 093 | -14 |
| 150 | 129 | 138 | -099 | 178 | 070 | 159 | 188 | 043 | 002 | -039 | -020 | 027 | 036 | -037 | 060 | -11 |
| 048 | 098 | 025 | -010 | -127 | 005 | 128 | 145 | -043 | 099 | 069 | -114 | -076 | 087 | 138 | 102 | 09 |
| 028 | 037 | 181 | 102 | 048 | -097 | 007 | -055 | -050 | 028 | 057 | -057 | -030 | 055 | 122 | 011 | 08 |
| 017 | 050 | 115 | -082 | -014 | -112 | 099 | -027 | 052 | -033 | 034 | 039 | -009 | 016 | 010 | -019 | 03 |
| 003 | 031 | -074 | 040 | 013 | 074 | 094 | -004 | -101 | 103 | 120 | 025 | -215 | 200 | 197 | 125 | 12 |
| 103 | 114 | 090 | 050 | -020 | 001 | 141 | 107 | 099 | 057 | 026 | 010 | -057 | 103 | 023 | 122 | -04 |
| 733 | 929 | 321 | 096 | -012 | -335 | 019 | -041 | 053 | 042 | 109 | -072 | -058 | 184 | 049 | 124 | 00 |
|  | 917 | 336 | 111 | 081 | -411 | 101 | 147 | 214 | 097 | 062 | 118 | -151 | 165 | 008 | 192 | -03 |
|  |  | 343 | 110 | 018 | -396 | 062 | 051 | 137 | 062 | 104 | 021 | -121 | 190 | 048 | 176 | -00 |
|  |  |  | 091 | 072 | -281 | 153 | 076 | 214 | 094 | -069 | -039 | 031 | 009 | -014 | 082 | -00 |
|  |  |  |  | 020 | -074 | -107 | 090 | -012 | 142 | 130 | -049 | -227 | 086 | 255 | 138 | 23 |
|  |  |  |  |  | 011 | -053 | 123 | -030 | 063 | 001 | -062 | -019 | 147 | 011 | -062 | -10 |
|  |  |  |  |  |  | -162 | -019 | -221 | 078 | 084 | -094 | -054 | 055 | 158 | 001 | 14 |
|  |  |  |  |  |  |  | 216 | 296 | -036 | -054 | 119 | -012 | -059 | -100 | 092 | -11 |
|  |  |  |  |  |  |  |  | 224 | 046 | 084 | -001 | -087 | 078 | 100 | 124 | 01 |
|  |  |  |  |  |  |  |  |  | -068 | 040 | 007 | 019 | -031 | -053 | 049 | -07 |
|  |  |  |  |  |  |  |  |  |  | -116 | -196 | -285 | 172 | 450 | 153 | 39 |
|  |  |  |  |  |  |  |  |  |  |  | -155 | -617 | 538 | 631 | 264 | 37 |
|  |  |  |  |  |  |  |  |  |  |  |  | -387 | -173 | -287 | 518 | -17 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -489 | -623 | -627 | -40 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 483 | 125 | 05 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 78 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 18 |

3

| 25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 003 | 005 | -071 | 013 | -063 | -012 | 176 | -066 | -060 | -005 | -008 | 072 | 039 | 147 | -045 | -027 | 017 |
| 036 | 059 | 028 | 044 | 031 | 091 | 063 | 099 | 038 | -092 | -033 | 015 | -011 | 044 | -214 | -093 | -666 |
| 071 | 093 | -145 | -070 | 083 | -027 | 086 | 058 | -095 | 056 | 014 | -017 | 028 | 006 | 148 | 150 | -049 |
| 037 | 060 | -119 | -088 | -121 | -048 | 371 | -152 | -132 | -150 | 139 | -021 | 336 | 374 | 033 | 019 | 034 |
| 138 | 102 | 095 | 053 | -034 | -021 | 436 | -089 | -095 | -031 | 198 | 059 | 326 | 352 | -033 | -024 | 050 |
| 122 | 011 | 086 | -003 | -152 | 057 | 192 | -002 | 047 | 005 | 049 | -059 | 105 | 078 | 103 | 019 | 049 |
| 010 | -019 | 031 | 002 | 014 | -009 | 114 | -061 | 008 | 059 | 023 | -094 | 131 | 082 | 079 | 018 | 030 |
| 197 | 125 | 120 | 063 | -106 | 012 | 181 | 049 | 022 | 020 | 113 | 003 | 212 | 161 | 022 | -077 | 116 |
| 023 | 122 | -048 | -091 | -056 | -070 | 417 | -045 | -099 | -166 | 176 | -107 | 403 | 525 | -051 | -062 | -010 |
| 049 | 124 | 006 | 175 | -003 | -057 | 080 | -347 | 008 | 036 | 111 | 063 | 010 | 154 | 394 | 349 | 006 |
| 008 | 192 | -031 | -004 | -096 | -077 | 045 | -163 | -019 | -034 | 172 | 019 | 095 | 120 | 427 | 357 | 007 |
| 048 | 176 | -003 | 106 | -049 | -081 | 066 | -260 | -006 | 001 | 148 | 052 | 096 | 136 | 434 | 377 | 006 |
| 014 | 082 | -004 | 037 | -094 | -054 | 083 | -103 | -072 | -011 | 134 | -090 | 072 | 121 | 152 | 176 | -070 |
| 255 | 138 | 235 | -020 | 006 | -020 | -027 | 111 | 050 | 258 | -090 | -083 | -173 | -135 | 111 | 146 | -077 |
| 011 | -062 | -101 | -065 | -060 | -027 | -077 | -039 | -078 | 032 | 017 | 028 | 011 | -057 | 113 | 108 | -042 |
| 153 | 001 | 145 | 073 | 068 | 041 | 047 | 052 | 128 | 112 | -053 | 063 | -006 | 022 | -171 | -134 | -001 |
| 100 | 092 | -116 | -052 | 072 | 050 | 163 | -067 | -110 | -101 | 140 | -097 | 156 | 252 | 008 | 027 | -126 |
| 100 | 124 | 017 | -001 | -100 | 018 | 201 | 069 | -037 | 113 | 171 | -013 | 075 | 152 | 059 | 076 | -059 |
| 053 | 049 | -076 | -069 | -002 | -068 | 111 | -022 | -036 | -080 | 106 | -040 | 068 | 117 | 099 | 099 | -039 |
| 450 | 153 | 397 | 185 | 107 | 023 | -042 | 046 | 131 | 134 | 009 | 023 | -064 | -121 | 064 | 105 | -031 |
| 631 | 264 | 371 | 116 | -041 | -079 | 071 | 062 | 060 | 099 | 052 | 013 | -003 | 003 | 068 | 055 | 012 |
| 287 | 518 | -176 | -075 | 016 | 094 | 006 | 172 | -052 | -050 | 067 | -080 | 075 | 013 | 048 | 032 | 023 |
| 623 | -627 | -403 | -126 | -029 | 006 | -068 | -165 | -073 | -092 | -054 | 009 | 011 | 052 | -106 | -111 | -009 |
| 483 | 125 | 056 | 130 | -087 | -094 | 106 | -032 | 030 | 069 | 118 | 064 | -061 | -005 | 053 | 032 | 025 |
|  |  | 784 | 215 | 004 | -024 | 000 | 063 | 167 | 191 | 030 | 063 | -089 | -156 | 099 | 050 | 047 |
|  |  | 185 | 090 | 017 | -040 | 123 | 139 | -019 | 021 | 100 | -018 | 085 | 014 | 219 | 220 | -026 |
|  |  |  | 172 | 070 | 047 | -073 | 087 | 137 | 210 | -015 | 065 | -063 | -180 | 075 | 028 | 048 |
|  |  |  |  | 112 | 066 | -014 | -010 | 076 | 335 | -048 | 318 | -037 | -118 | 029 | 049 | 054 |
|  |  |  |  |  | 053 | -057 | 060 | -107 | 027 | -076 | -012 | -097 | -126 | -045 | 088 | -073 |
|  |  |  |  |  |  | -008 | -000 | 019 | 070 | 047 | -002 | -037 | -020 | -011 | -086 | 103 |
|  |  |  |  |  |  |  | -170 | -139 | -057 | 241 | 035 | 401 | 592 | -014 | -062 | 067 |
|  |  |  |  |  |  |  |  | 066 | 032 | -104 | 014 | -117 | -135 | -203 | -116 | -070 |
|  |  |  |  |  |  |  |  |  | 219 | -151 | 053 | -065 | -087 | -015 | -070 | 068 |
|  |  |  |  |  |  |  |  |  |  | -084 | 116 | -144 | -105 | 084 | -010 | 092 |
|  |  |  |  |  |  |  |  |  |  |  | -038 | 153 | 237 | 070 | 051 | 002 |
|  |  |  |  |  |  |  |  |  |  |  |  | 094 | -018 | 021 | -110 | 144 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 529 | 062 | -016 | 101 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -043 | -081 | 061 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 502 | 290 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -624 |

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| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 041 | 026 | 164 | 079 | 097 | -035 | 276 | 308 | 041 | 091 | 072 | 094 |
| 2 | | | -037 | 125 | 143 | -000 | -011 | -016 | 107 | -202 | -179 | -204 | 081 |
| 3 | | | | 233 | 202 | -056 | 016 | 076 | 221 | 021 | 064 | 036 | 091 |
| 4 | | | | | 384 | 049 | 071 | 296 | 466 | -121 | -044 | -096 | 015 |
| 5 | | | | | | 324 | 320 | 228 | 259 | -095 | -113 | -111 | 010 |
| 6 | | | | | | | 552 | 008 | 066 | -061 | -046 | -071 | -080 |
| 7 | | | | | | | | -090 | 102 | 015 | -046 | -031 | -153 |
| 8 | | | | | | | | | 391 | -050 | -052 | -055 | -009 |
| 9 | | | | | | | | | | -068 | 007 | -045 | 014 |
| 10 | | | | | | | | | | | 764 | 943 | 121 |
| 11 | | | | | | | | | | | | 918 | 183 |
| 12 | | | | | | | | | | | | | 161 |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
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| 35 | | | | | | | | | | | | | |
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| 37 | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | |

## T-SCORE MATRIX--GIRLS (N = 204)

| (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 072 | 094 | -014 | 073 | 076 | 089 | 184 | -036 | 059 | 050 | -074 | -013 | 098 | 001 | 038 | 026 | 025 |
| -204 | 081 | 254 | -057 | 247 | -038 | 131 | 067 | 144 | -031 | 027 | -075 | 116 | -015 | 067 | -028 | -062 |
| 036 | 091 | -032 | 073 | 120 | 075 | 155 | 082 | -029 | -022 | -039 | 037 | 010 | -066 | -003 | -086 | -120 |
| -096 | 015 | -005 | 105 | 087 | 174 | 206 | -004 | -058 | 086 | -016 | -037 | 047 | -029 | -033 | 010 | -056 |
| -111 | 010 | 008 | 081 | 152 | 054 | 154 | 022 | -067 | 227 | -065 | -079 | 196 | 031 | 018 | 014 | 002 |
| -071 | -080 | 090 | 021 | 181 | -048 | -068 | -115 | 074 | 178 | -043 | -115 | 183 | 140 | 004 | 111 | 112 |
| -031 | -153 | -079 | 007 | 131 | -035 | 005 | -076 | -089 | 106 | -000 | -055 | 141 | 003 | 034 | 003 | 058 |
| -055 | -009 | 026 | 123 | 107 | 168 | 162 | 031 | 133 | 159 | -111 | -117 | 153 | 183 | 033 | 128 | 159 |
| -045 | 014 | -073 | 021 | 197 | 164 | 176 | 167 | -003 | 096 | 050 | -119 | 125 | 011 | 083 | 013 | -017 |
| 943 | 121 | -156 | 051 | -217 | 152 | 027 | 060 | 102 | 225 | -055 | -193 | 166 | 236 | 092 | 187 | 050 |
| 918 | 183 | -169 | 098 | -318 | 271 | 091 | 125 | 016 | 171 | 048 | -197 | 104 | 136 | 113 | 106 | 058 |
|  | 161 | -175 | 090 | -292 | 230 | 049 | 121 | 069 | 209 | 005 | -217 | 147 | 197 | 114 | 153 | 046 |
|  |  | 144 | -017 | -204 | 125 | 141 | 098 | 021 | -011 | 126 | -074 | 054 | -030 | 135 | -100 | -007 |
|  |  |  | -107 | 116 | -109 | 067 | -088 | 287 | 089 | -112 | -068 | 116 | 270 | -008 | 112 | -060 |
|  |  |  |  | -085 | 072 | 023 | 121 | -081 | 015 | 033 | -029 | -030 | -004 | -066 | 038 | 018 |
|  |  |  |  |  | -127 | 148 | -068 | 140 | 075 | -090 | -051 | 191 | 022 | -002 | 031 | 001 |
|  |  |  |  |  |  | 172 | 311 | 003 | -013 | 090 | -079 | -027 | 031 | 068 | 091 | 029 |
|  |  |  |  |  |  |  | 215 | 015 | 034 | -136 | 041 | 103 | 016 | -052 | -040 | -029 |
|  |  |  |  |  |  |  |  | -115 | 052 | 219 | -177 | -024 | -085 | 127 | -055 | -071 |
|  |  |  |  |  |  |  |  |  | 019 | -183 | -339 | 390 | 523 | 162 | 441 | 033 |
|  |  |  |  |  |  |  |  |  |  | -266 | -504 | 647 | 597 | 138 | 410 | 100 |
|  |  |  |  |  |  |  |  |  |  |  | -507 | -244 | -345 | 608 | -245 | 068 |
|  |  |  |  |  |  |  |  |  |  |  |  | -486 | -361 | -674 | -347 | -197 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 475 | 184 | 127 | 104 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 116 | 763 | 092 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 079 | 075 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 163 |

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| 5) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 038 | 026 | 025 | 080 | -054 | 153 | -008 | 008 | -002 | 066 | -172 | 142 | 297 | -023 | -086 | 064 |
| 15 | 067 | -028 | -062 | -108 | -023 | 108 | -032 | 130 | 128 | 031 | 001 | 038 | 096 | -220 | -116 | -064 |
| 66 | -003 | -036 | -120 | 057 | -035 | 279 | -023 | -060 | -101 | 002 | -104 | 277 | 266 | -006 | 071 | -087 |
| 29 | -033 | 010 | -056 | -027 | 063 | 475 | -046 | -104 | -049 | 133 | -081 | 390 | 375 | -111 | -090 | 006 |
| 31 | 018 | 014 | 002 | 050 | -090 | 352 | -019 | -096 | -087 | 090 | 061 | 220 | 219 | -134 | -020 | -086 |
| 40 | 004 | 111 | 112 | 113 | -037 | 087 | -038 | 083 | -043 | 057 | -078 | -004 | 068 | -117 | -095 | 015 |
| 03 | 034 | 003 | 058 | 048 | -058 | 078 | -039 | 031 | -052 | 154 | 091 | 120 | 101 | -084 | -070 | -002 |
| 83 | 033 | 128 | 159 | 076 | -021 | 203 | -049 | 112 | 063 | 054 | 023 | 165 | 312 | -067 | -050 | 016 |
| 11 | 083 | 013 | -017 | -100 | -098 | 395 | 014 | -035 | -061 | 182 | -044 | 332 | 531 | -111 | -109 | 046 |
| 36 | 092 | 187 | 050 | 071 | -007 | -050 | -111 | 148 | 194 | 031 | 113 | -016 | 020 | 507 | 288 | 083 |
| 36 | 113 | 106 | 058 | 074 | 014 | 007 | -046 | 080 | 088 | -036 | 122 | 036 | 086 | 411 | 245 | 083 |
| 97 | 114 | 153 | 046 | 082 | -008 | -033 | -059 | 126 | 162 | -007 | 116 | 000 | 049 | 488 | 278 | 098 |
| 30 | 135 | -100 | -007 | -088 | 006 | 031 | 050 | -074 | -012 | 038 | -019 | 007 | -046 | 176 | 188 | -050 |
| 70 | -008 | 112 | -060 | -011 | -028 | -001 | 043 | 141 | 186 | -094 | -114 | -094 | 004 | -011 | 043 | -075 |
| 04 | -066 | 039 | 018 | 054 | -065 | -107 | -092 | -107 | -101 | -048 | -141 | 155 | -066 | 040 | 105 | -106 |
| 22 | -002 | 031 | 001 | -010 | -100 | 138 | 047 | 149 | 080 | 016 | -045 | 112 | 131 | -244 | -234 | 040 |
| 31 | 068 | 091 | 029 | 033 | 037 | 177 | -016 | 105 | -042 | 085 | 004 | 195 | 172 | 078 | 083 | 013 |
| 16 | -052 | -040 | -029 | 033 | 095 | 232 | 005 | -007 | 088 | 249 | 005 | 209 | 334 | 007 | 039 | -050 |
| 85 | 127 | -055 | -071 | -085 | 046 | 174 | 071 | -012 | -125 | 089 | -013 | 061 | 104 | 076 | 111 | -046 |
| 23 | 162 | 441 | 033 | -079 | -044 | -043 | 200 | 240 | 207 | 050 | -063 | -122 | -020 | -011 | -043 | 051 |
| 97 | 138 | 410 | 100 | 088 | -086 | 190 | -072 | 104 | 114 | 005 | 037 | 061 | 061 | 119 | 097 | -021 |
| 45 | 608 | -245 | 068 | -033 | 036 | -003 | 117 | -095 | -064 | -078 | 050 | -019 | -036 | -012 | -000 | -011 |
| 61 | -674 | -347 | -197 | -013 | 051 | -141 | -113 | -142 | -163 | 025 | -060 | -000 | -049 | -063 | -036 | -013 |
| 75 | 184 | 127 | 104 | -007 | -039 | 191 | 075 | 123 | 109 | 096 | -034 | 056 | 128 | 055 | 006 | 054 |
|  | 116 | 763 | 092 | -007 | -129 | 019 | 041 | 199 | 204 | 005 | 028 | -055 | 023 | 087 | 024 | 024 |
|  |  | 079 | 075 | -064 | -063 | 022 | 135 | 029 | 050 | -042 | 062 | 026 | 089 | 013 | -013 | 048 |
|  |  |  | 163 | 014 | -084 | -002 | -016 | 231 | 239 | -023 | 030 | -040 | 005 | 038 | -044 | 049 |
|  |  |  |  | 130 | 099 | -019 | 115 | 086 | 239 | 040 | 233 | 047 | 018 | 139 | -088 | 176 |
|  |  |  |  |  | -065 | -091 | -084 | 103 | 119 | -106 | -003 | 063 | -055 | 018 | -022 | 004 |
|  |  |  |  |  |  | 074 | 081 | -015 | -001 | 038 | 086 | 025 | -050 | -102 | -006 | -061 |
|  |  |  |  |  |  |  | 018 | -021 | -028 | 243 | -024 | 381 | 536 | -015 | -095 | 108 |
|  |  |  |  |  |  |  |  | -009 | -013 | 011 | 063 | -137 | -080 | -110 | -082 | 016 |
|  |  |  |  |  |  |  |  |  | 277 | -132 | 129 | -031 | 073 | 004 | -028 | 061 |
|  |  |  |  |  |  |  |  |  |  | -000 | 124 | 031 | 071 | 092 | -018 | 075 |
|  |  |  |  |  |  |  |  |  |  |  | 039 | 224 | 160 | 066 | -033 | 093 |
|  |  |  |  |  |  |  |  |  |  |  |  | -027 | -034 | 082 | -025 | 115 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 458 | -002 | -014 | 015 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -058 | -092 | 088 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 466 | 225 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -707 |

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| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  | -010 | -132 | -019 | -423 | -475 | -478 | -095 | -138 | -006 | -057 | 174 | -020 |
| 2 |  |  | 460 | 327 | 049 | 258 | 158 | 177 | 066 | -119 | -033 | 062 | 162 |
| 3 |  |  |  | 324 | 015 | 190 | 107 | 008 | 144 | -162 | -011 | 009 | -011 |
| 4 |  |  |  |  | -013 | 086 | 035 | 075 | 098 | 007 | 218 | 150 | 360 |
| 5 |  |  |  |  |  | 749 | 943 | 245 | 141 | -031 | 004 | -248 | -066 |
| 6 |  |  |  |  |  |  | 927 | 106 | 198 | 048 | 117 | -312 | 074 |
| 7 |  |  |  |  |  |  |  | 191 | 180 | 005 | 063 | -300 | -004 |
| 8 |  |  |  |  |  |  |  |  | 174 | -105 | 140 | -198 | -172 |
| 9 |  |  |  |  |  |  |  |  |  | 142 | 025 | -122 | 136 |
| 10 |  |  |  |  |  |  |  |  |  |  | -041 | -054 | 049 |
| 11 |  |  |  |  |  |  |  |  |  |  |  | 072 | 016 |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  | 431 |
| 13 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 21 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25 |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 27 |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 31 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 32 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 33 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 34 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 35 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 38 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 41 |  |  |  |  |  |  |  |  |  |  |  |  |  |

2

RAW SCORE MATRIX--SIXTH-GRADE BOYS (N = 46)

| (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -140 | 070 | 056 | 086 | -081 | 022 | 073 | -001 | -127 | -144 | -076 | 222 | 088 | 417 | 140 | 164 | 111 |
| 209 | 042 | -307 | -012 | -081 | 257 | -151 | 063 | -021 | 096 | 088 | -071 | 013 | -123 | 001 | 003 | 055 |
| 194 | 138 | -107 | -077 | 161 | 201 | 019 | 035 | 161 | -071 | 036 | 047 | 274 | -027 | 145 | -032 | 102 |
| 216 | 221 | -029 | -072 | 381 | 046 | -128 | 147 | 137 | -233 | 021 | 124 | 498 | 134 | 061 | -141 | 221 |
| 166 | 114 | -009 | -109 | -017 | 304 | 020 | 305 | 040 | 021 | 380 | -062 | -053 | -464 | -146 | 021 | -082 |
| 320 | 069 | -180 | -215 | -025 | 237 | -143 | 383 | 122 | -116 | 472 | -022 | 076 | -428 | 032 | -019 | -095 |
| 252 | 097 | -098 | -171 | -027 | 288 | -062 | 369 | 080 | -047 | 455 | -043 | 006 | -476 | -069 | 004 | -094 |
| 175 | 092 | 111 | -026 | 002 | 048 | 155 | -053 | -190 | 198 | -002 | 123 | -220 | 125 | -052 | -251 | 007 |
| -053 | -030 | 128 | -112 | -048 | -043 | 213 | 173 | 072 | -298 | 268 | 336 | 007 | 134 | 210 | -138 | 326 |
| 180 | -040 | 259 | 010 | 025 | 066 | 041 | -066 | -068 | -048 | -084 | 048 | -001 | 083 | 064 | -076 | -277 |
| -066 | 001 | -065 | 042 | 381 | -132 | -201 | -001 | 057 | 066 | -068 | -132 | 095 | -090 | -295 | -047 | 051 |
| 037 | 044 | -220 | -064 | 317 | 152 | -118 | 131 | 083 | -140 | -035 | -001 | 225 | -004 | 096 | -011 | 184 |
| 249 | 206 | 048 | 056 | 169 | 303 | -171 | 157 | 349 | -273 | -032 | -010 | 338 | -007 | 014 | -131 | 049 |
|  | 387 | -094 | -264 | 138 | 413 | -084 | 051 | 156 | 006 | -005 | -099 | 037 | -162 | 129 | -169 | -107 |
|  |  | 335 | 174 | 432 | 476 | 062 | 289 | -032 | -227 | 097 | 331 | 062 | 259 | 031 | 036 | 106 |
|  |  |  | 448 | 028 | 034 | 026 | -169 | 064 | 078 | -274 | -007 | 052 | 180 | 006 | 042 | -166 |
|  |  |  |  | 230 | 006 | 070 | -272 | 198 | -035 | -442 | -039 | 191 | 298 | -079 | -048 | -115 |
|  |  |  |  |  | 217 | 022 | 015 | 196 | -226 | -064 | 125 | 345 | 153 | 024 | 060 | 434 |
|  |  |  |  |  |  | -165 | 162 | 044 | 043 | 009 | -057 | 015 | -156 | 054 | 091 | 102 |
|  |  |  |  |  |  |  | -274 | -260 | -163 | 261 | 451 | -159 | 277 | 200 | -030 | 076 |
|  |  |  |  |  |  |  |  | -056 | -584 | 704 | 558 | 291 | 054 | -045 | -028 | 123 |
|  |  |  |  |  |  |  |  |  | -392 | -243 | -260 | 596 | -141 | 098 | -106 | 097 |
|  |  |  |  |  |  |  |  |  |  | -455 | -712 | -602 | -176 | -202 | 033 | -276 |
|  |  |  |  |  |  |  |  |  |  |  | 577 | 065 | -126 | 151 | 062 | 140 |
|  |  |  |  |  |  |  |  |  |  |  |  | 170 | 702 | 212 | -050 | 194 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 097 | 047 | -067 | 149 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 168 | -037 | 110 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -121 | -033 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 149 |

3

| (25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 222 | 088 | 417 | 140 | 164 | 111 | -141 | -166 | -080 | 015 | -057 | -034 | -037 | 042 | -200 | 002 | 134 |
| -071 | 013 | -123 | 001 | 003 | 055 | 184 | -223 | 117 | 249 | 158 | -070 | 152 | 252 | -060 | -193 | 008 |
| 047 | 274 | -027 | 145 | -032 | 102 | 306 | -149 | 180 | 178 | -048 | 295 | -260 | 026 | -088 | -110 | 044 |
| 124 | 498 | 134 | 061 | -141 | 221 | 288 | 138 | 287 | 339 | 001 | -177 | 042 | -073 | 011 | -045 | 296 |
| -062 | -053 | -464 | -146 | 021 | -082 | 027 | 231 | 414 | 291 | 224 | 313 | -124 | -287 | 170 | -253 | -076 |
| -022 | 076 | -428 | 032 | -019 | -095 | 094 | 302 | 435 | 223 | 246 | 273 | -041 | -101 | -009 | -133 | -030 |
| -043 | 006 | -476 | -069 | 004 | -094 | 064 | 281 | 453 | 277 | 250 | 315 | -092 | -209 | 090 | -210 | -061 |
| 123 | -220 | 125 | -052 | -251 | 007 | -079 | -164 | -005 | 182 | -091 | 083 | -043 | -241 | 040 | -115 | 004 |
| 336 | 007 | 134 | 210 | -138 | 326 | -107 | -099 | -136 | -217 | 092 | 178 | -035 | -209 | -027 | 095 | -026 |
| 048 | -001 | 083 | 064 | -076 | -277 | -003 | 069 | -068 | -130 | 288 | 021 | 057 | 169 | 004 | 181 | 055 |
| -132 | 095 | -090 | -295 | -047 | 051 | -184 | 025 | 208 | 014 | -009 | 145 | -185 | 085 | -203 | -183 | -038 |
| -001 | 225 | -004 | 096 | -011 | 184 | -117 | 089 | 081 | 198 | -014 | -086 | -060 | -010 | 131 | 169 | 200 |
| -010 | 338 | -007 | 014 | -131 | 049 | 195 | 187 | 224 | 260 | 004 | -046 | -019 | 036 | 034 | 119 | 573 |
| -099 | 037 | -162 | 129 | -169 | -107 | 236 | 132 | 377 | 535 | -029 | -079 | 047 | -003 | -148 | -166 | 190 |
| 331 | 062 | 259 | 031 | 036 | 106 | 113 | 329 | 499 | 679 | -144 | -120 | -044 | -295 | 222 | -199 | 497 |
| -007 | 052 | 180 | 006 | 042 | -166 | -047 | 074 | 141 | 061 | -022 | 021 | -003 | 008 | -098 | 037 | 382 |
| -039 | 191 | 298 | -079 | -048 | -115 | -007 | -120 | -017 | 085 | 155 | 038 | 027 | -038 | 122 | -070 | 271 |
| 125 | 345 | 153 | 024 | 060 | 434 | 155 | 190 | 286 | 432 | 106 | -155 | 089 | -358 | 309 | -053 | 259 |
| -057 | 015 | -156 | 054 | 091 | 102 | 214 | 090 | 532 | 541 | 049 | 141 | -072 | 032 | 085 | -206 | 389 |
| 451 | -159 | 277 | 200 | -030 | 076 | -125 | -073 | -388 | -250 | -092 | 149 | -186 | -410 | 356 | 075 | -135 |
| 558 | 291 | 054 | -045 | -028 | 123 | -143 | 149 | 359 | 246 | -024 | 137 | -273 | -152 | 129 | -046 | 120 |
| -260 | 596 | -141 | 098 | -106 | 097 | 153 | 007 | 133 | 187 | 178 | 134 | -050 | -133 | -265 | -084 | 194 |
| -712 | -602 | -476 | -202 | 033 | -276 | 166 | -128 | -015 | -055 | -028 | -087 | 179 | 382 | -185 | -120 | -152 |
| 577 | 065 | -126 | 151 | 062 | 140 | -162 | 133 | 125 | -034 | -042 | 194 | -215 | -266 | 166 | -063 | -171 |
|  | 170 | 702 | 212 | -050 | 194 | -220 | 022 | -116 | -024 | -120 | 047 | -220 | -337 | 404 | 169 | 079 |
|  |  | 097 | 047 | -067 | 149 | 112 | 126 | 147 | 148 | 034 | 153 | -231 | -105 | -046 | 029 | 292 |
|  |  |  | 168 | -037 | 110 | -167 | -101 | -297 | -070 | -095 | -183 | 043 | -148 | 284 | 264 | 174 |
|  |  |  |  | -121 | -033 | 136 | 198 | -113 | -064 | -129 | 036 | 029 | 001 | -147 | 147 | -051 |
|  |  |  |  |  | 149 | -072 | 160 | 028 | 058 | -028 | -074 | 143 | 120 | 105 | 116 | -066 |
|  |  |  |  |  |  | 026 | 028 | 165 | 179 | 217 | -267 | 260 | -479 | 281 | 145 | 202 |
|  |  |  |  |  |  |  | 137 | 221 | 233 | 061 | -096 | 107 | 018 | 131 | -140 | 172 |
|  |  |  |  |  |  |  |  | 180 | 244 | 018 | -074 | 057 | -222 | 204 | 278 | 236 |
|  |  |  |  |  |  |  |  |  | 677 | 170 | 070 | -062 | -070 | -023 | -246 | 442 |
|  |  |  |  |  |  |  |  |  |  | 105 | -095 | 061 | -190 | 159 | -065 | 548 |
|  |  |  |  |  |  |  |  |  |  |  | 096 | 234 | -162 | 136 | 020 | 138 |
|  |  |  |  |  |  |  |  |  |  |  |  | -762 | 069 | -131 | -056 | 013 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -000 | 062 | 039 | -071 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -387 | 063 | -190 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 346 | 223 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 309 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  | 122 | -191 | 184 | -531 | -499 | -573 | -231 | 092 | 006 | 011 | 514 | 267 | 361 |
| 2 |  |  | 103 | 370 | 191 | 075 | 153 | -340 | -247 | 218 | -014 | -055 | 363 | 163 |
| 3 |  |  |  | 064 | 035 | 261 | 155 | -150 | -119 | -048 | 229 | 052 | 093 | 113 |
| 4 |  |  |  |  | 148 | 098 | 139 | 029 | -007 | -097 | 278 | 259 | 287 | 417 |
| 5 |  |  |  |  |  | 620 | 915 | -066 | -114 | 213 | -061 | -480 | 035 | 008 |
| 6 |  |  |  |  |  |  | 884 | 229 | -301 | 288 | -011 | -273 | 084 | 064 |
| 7 |  |  |  |  |  |  |  | 078 | -223 | 275 | -042 | -426 | 064 | 038 |
| 8 |  |  |  |  |  |  |  |  | 204 | 047 | 038 | -078 | -147 | 003 |
| 9 |  |  |  |  |  |  |  |  |  | -115 | -214 | -146 | -495 | -225 |
| 10 |  |  |  |  |  |  |  |  |  |  | 106 | -163 | 152 | 224 |
| 11 |  |  |  |  |  |  |  |  |  |  |  | 103 | 205 | 226 |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  | 174 | 123 |
| 13 |  |  |  |  |  |  |  |  |  |  |  |  |  | 215 |
| 14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 41 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

2

# RAW SCORE MATRIX--SIXTH GRADE GIRLS (N = 32)

| 14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 361 | 422 | -013 | 232 | 129 | 443 | -099 | -198 | 022 | 124 | -150 | -130 | -175 | -027 | 062 | 137 | 207 |
| 163 | -119 | 121 | 167 | 108 | 158 | -227 | 070 | 249 | -142 | -138 | 009 | 167 | 077 | -090 | 069 | -075 |
| 113 | 095 | -227 | -110 | -114 | 211 | -113 | -144 | 013 | 182 | -148 | -064 | -066 | -021 | -175 | -016 | -201 |
| 417 | 107 | 142 | -113 | 251 | 464 | 416 | 045 | 128 | -211 | 225 | 080 | 206 | -110 | -036 | 132 | 329 |
| 008 | -022 | -078 | -112 | 299 | -120 | -002 | 383 | -052 | -212 | 226 | 258 | 220 | 097 | -159 | -079 | 143 |
| 064 | -080 | -091 | -347 | 030 | 022 | -068 | 245 | 092 | -172 | 092 | 214 | 170 | 097 | 019 | -489 | -006 |
| 038 | -054 | -093 | -246 | 194 | -060 | -036 | 354 | 017 | -215 | 182 | 264 | 219 | 107 | -085 | -298 | 082 |
| 003 | -264 | -052 | -602 | 080 | 068 | 214 | 027 | 204 | -220 | 128 | 100 | 096 | 011 | -084 | -333 | -025 |
| 225 | -152 | 052 | -239 | 140 | -232 | 315 | 294 | -326 | -089 | 115 | 471 | -061 | 377 | 118 | 098 | 288 |
| 224 | 162 | 240 | 138 | 244 | 159 | -319 | 175 | 052 | -096 | 172 | 162 | 034 | 024 | -107 | -377 | -195 |
| 226 | 136 | 217 | 036 | 381 | 266 | 060 | -193 | 109 | 042 | 076 | -234 | 039 | -359 | -079 | -087 | -145 |
| 123 | 259 | 013 | -102 | -226 | 223 | 257 | -284 | 137 | 065 | -084 | -004 | -003 | 069 | 075 | -024 | 183 |
| 215 | 407 | -149 | 123 | 143 | 462 | -167 | 100 | -031 | 021 | 157 | -160 | -017 | -271 | -104 | -106 | -093 |
|  | 305 | 083 | -017 | 165 | 564 | 032 | -117 | 121 | 002 | 214 | -180 | -122 | -342 | 003 | 016 | -043 |
|  |  | 099 | 187 | 130 | 402 | -070 | 072 | -131 | -018 | 159 | 050 | -015 | -035 | -081 | 026 | 080 |
|  |  |  | 432 | -012 | -173 | 240 | 222 | -188 | -116 | -014 | 267 | 061 | 321 | -025 | -041 | -004 |
|  |  |  |  | -058 | -159 | -299 | -094 | -265 | 321 | -198 | -293 | -207 | -132 | -098 | 223 | -092 |
|  |  |  |  |  | 377 | -010 | 191 | 007 | -183 | 243 | 088 | 003 | -110 | -262 | 197 | 186 |
|  |  |  |  |  |  | 004 | -178 | 380 | -226 | 056 | -219 | 209 | -255 | -095 | -023 | 053 |
|  |  |  |  |  |  |  | 244 | -093 | -407 | 449 | 470 | 250 | 189 | 338 | 066 | 274 |
|  |  |  |  |  |  |  |  | -484 | -460 | 552 | 801 | 152 | 424 | -114 | -118 | 276 |
|  |  |  |  |  |  |  |  |  | -469 | -248 | -355 | 519 | -191 | 102 | -073 | -034 |
|  |  |  |  |  |  |  |  |  |  | -383 | -457 | -669 | -209 | -123 | 166 | -193 |
|  |  |  |  |  |  |  |  |  |  |  | 365 | 131 | -333 | 057 | -164 | -006 |
|  |  |  |  |  |  |  |  |  |  |  |  | 244 | 741 | -024 | -042 | 363 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 165 | 018 | -048 | 289 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -056 | 095 | 368 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -281 | -061 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 327 |

3

| 25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 130 | -175 | -027 | 062 | 137 | 207 | 155 | 171 | 532 | -012 | -340 | -478 | 237 | -027 | 213 | -042 | 367 |
| 009 | 167 | 077 | -090 | 069 | -075 | 301 | 060 | 082 | -032 | -038 | 241 | -300 | 044 | 100 | 187 | 056 |
| 064 | -066 | -021 | -175 | -016 | -201 | -207 | -040 | 141 | 048 | 049 | 163 | -138 | 203 | -387 | 427 | 094 |
| 080 | 206 | -110 | -036 | 132 | 329 | 393 | -201 | 469 | 179 | -269 | -229 | 022 | -022 | 165 | 312 | 563 |
| 258 | 220 | 097 | -159 | -079 | 143 | 213 | 005 | -221 | 333 | 417 | 430 | -116 | -113 | -118 | 030 | -138 |
| 214 | 170 | 097 | 019 | -489 | -006 | 075 | 101 | -107 | 395 | 511 | 489 | -101 | -135 | -175 | 188 | -059 |
| 264 | 219 | 107 | -085 | -298 | 082 | 165 | 055 | -147 | 401 | 512 | 508 | -121 | -137 | -160 | 114 | -113 |
| 100 | 096 | 011 | -084 | -333 | -025 | -045 | -295 | -110 | 027 | -139 | 089 | -219 | -066 | 055 | -137 | -058 |
| 471 | -061 | 377 | 118 | 098 | 288 | -379 | -212 | -135 | -037 | -176 | 009 | -162 | -142 | 193 | -124 | 020 |
| 162 | 034 | 024 | -107 | -377 | -195 | 083 | -126 | 057 | 261 | 337 | 312 | -011 | -107 | 121 | -225 | 010 |
| 234 | 039 | -359 | -079 | -087 | -145 | 113 | -175 | 259 | 052 | -172 | -269 | 149 | -076 | 276 | -121 | 323 |
| 004 | -003 | 069 | 075 | -024 | 183 | 052 | 079 | 231 | -248 | -248 | -354 | 179 | 174 | -192 | 214 | 229 |
| 160 | -017 | -271 | -104 | -106 | -093 | 380 | 116 | 396 | 118 | 012 | 015 | -005 | 213 | 045 | 070 | 105 |
| 180 | -122 | -342 | 003 | 016 | -043 | 389 | -029 | 466 | 270 | 036 | -172 | 222 | 086 | 153 | 283 | 555 |
| 050 | -015 | -035 | -081 | 026 | 080 | 218 | 123 | 318 | 043 | 040 | -302 | 370 | 138 | 132 | -013 | 212 |
| 267 | 061 | 321 | -025 | -041 | -004 | 315 | -182 | -084 | -236 | -168 | -113 | -020 | -002 | 346 | 074 | 230 |
| 293 | -207 | -132 | -098 | 223 | -092 | 264 | 002 | 201 | -023 | -166 | -140 | 011 | 070 | 141 | 004 | 016 |
| 088 | 003 | -110 | -262 | 197 | 186 | 078 | -202 | 113 | 390 | -019 | -029 | 016 | -143 | 305 | -339 | -055 |
| 219 | 209 | -255 | -095 | -023 | 053 | 166 | 069 | 620 | 196 | -101 | -461 | 425 | -018 | -017 | 001 | 411 |
| 470 | 250 | 189 | 338 | 066 | 274 | -038 | -270 | -097 | -201 | -351 | -255 | -021 | -019 | 140 | 266 | 245 |
| 801 | 152 | 424 | -114 | -118 | 276 | 116 | -026 | -349 | -068 | 285 | 468 | -274 | -160 | 121 | -016 | -115 |
| 355 | 519 | -191 | 102 | -073 | -034 | 117 | -001 | 163 | -081 | -156 | -297 | 195 | -219 | -127 | -075 | 135 |
| 457 | -669 | -209 | -123 | 166 | -193 | -185 | 083 | 087 | 214 | 102 | 061 | 020 | 296 | -046 | 023 | -135 |
| 365 | 131 | -333 | 057 | -164 | -006 | 052 | -402 | -055 | -036 | 106 | 141 | -064 | -014 | 014 | 101 | 050 |
|  | 244 | 741 | -024 | -042 | 363 | -075 | -040 | -397 | -133 | 131 | 319 | -241 | -121 | 133 | -033 | -091 |
|  |  | 165 | 018 | -048 | 289 | 063 | -010 | -018 | -405 | -093 | -262 | 211 | -240 | -067 | -126 | -082 |
|  |  |  | -056 | 095 | 368 | -088 | 255 | -382 | -172 | 057 | 186 | -157 | -074 | 098 | -083 | -132 |
|  |  |  |  | -281 | -061 | -060 | 151 | 146 | -050 | 079 | -171 | 260 | -061 | 281 | 247 | 210 |
|  |  |  |  |  | 327 | 010 | 041 | -064 | -015 | -227 | -216 | 043 | 029 | 203 | -182 | -061 |
|  |  |  |  |  |  | 124 | 189 | 017 | 214 | 076 | -078 | 153 | -580 | 086 | -022 | 243 |
|  |  |  |  |  |  |  | -012 | 304 | 099 | -032 | -124 | 110 | -199 | 277 | 108 | 323 |
|  |  |  |  |  |  |  |  | 094 | 104 | 371 | 053 | 262 | -087 | 064 | 036 | 112 |
|  |  |  |  |  |  |  |  |  | 282 | -291 | -492 | 295 | 058 | -007 | 256 | 662 |
|  |  |  |  |  |  |  |  |  |  | 287 | 271 | -052 | -287 | 089 | -002 | 125 |
|  |  |  |  |  |  |  |  |  |  |  | 511 | 298 | -205 | -064 | -056 | -147 |
|  |  |  |  |  |  |  |  |  |  |  |  | -668 | 030 | -118 | 188 | -380 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -210 | 077 | -255 | 297 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -157 | 251 | -212 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -310 | 136 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 462 |

1

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | -390 | -150 | -231 | -498 | -646 | -596 | -218 | -011 | -041 | 170 | 336 | -229 | -013 |
| 2 | | | 505 | 369 | 105 | 375 | 245 | 399 | 026 | -026 | 040 | -086 | 071 | 257 |
| 3 | | | | 416 | -001 | 139 | 069 | 122 | -200 | -148 | -086 | 046 | -035 | 299 |
| 4 | | | | | 181 | 360 | 279 | 219 | -190 | 089 | 016 | 171 | -048 | 387 |
| 5 | | | | | | 818 | 958 | 161 | 023 | -087 | -016 | -297 | -229 | 094 |
| 6 | | | | | | | 949 | 192 | -033 | -021 | 028 | -308 | 000 | 205 |
| 7 | | | | | | | | 184 | -004 | -059 | 005 | -318 | -125 | 154 |
| 8 | | | | | | | | | -022 | -092 | -159 | -299 | -157 | 061 |
| 9 | | | | | | | | | | 079 | -073 | 071 | -032 | -338 |
| 10 | | | | | | | | | | | -101 | 283 | 244 | 238 |
| 11 | | | | | | | | | | | | 049 | 046 | 266 |
| 12 | | | | | | | | | | | | | -148 | 145 |
| 13 | | | | | | | | | | | | | | 145 |
| 14 | | | | | | | | | | | | | | |
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| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |

RAW SCORE MATRIX--PRE-FRESHMAN BOYS (N = 55)

| 14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 013 | -099 | -022 | 059 | 086 | -039 | 110 | 159 | -221 | -041 | -003 | 272 | 010 | 265 | -018 | -005 | -117 |
| 257 | 094 | 060 | 175 | -181 | 271 | 033 | -109 | 264 | -130 | 076 | -020 | 281 | -049 | -189 | 047 | 006 |
| 299 | 207 | -011 | 069 | -092 | 436 | -017 | 047 | 117 | -064 | -047 | 134 | 157 | 156 | -279 | 036 | -190 |
| 387 | 286 | 053 | 014 | 127 | 501 | -063 | 100 | 044 | -008 | -026 | 109 | 110 | 112 | -190 | -080 | -199 |
| 094 | 078 | 238 | -061 | 201 | 121 | 035 | -270 | 123 | 086 | 059 | -244 | 049 | -275 | -134 | -010 | 057 |
| 205 | 096 | 188 | -050 | 191 | 260 | -153 | -165 | 309 | 020 | 059 | -285 | 106 | -317 | -058 | -038 | -014 |
| 154 | 091 | 224 | -059 | 207 | 196 | -058 | -230 | 223 | 056 | 062 | -276 | 081 | -309 | -104 | -026 | 024 |
| 061 | -074 | 161 | 145 | -140 | 106 | 090 | -125 | -016 | 057 | 026 | -011 | 153 | -033 | -343 | 006 | 115 |
| 338 | 012 | 309 | 271 | 142 | -035 | 279 | 239 | -113 | -388 | 255 | 228 | 295 | 131 | 076 | 137 | 432 |
| 238 | -231 | -198 | 010 | 186 | 005 | -128 | 242 | -086 | -100 | 241 | -126 | -027 | -221 | 204 | 088 | -026 |
| 266 | 233 | 204 | -002 | 250 | 352 | -149 | -017 | 055 | 104 | -109 | -061 | 012 | -028 | 007 | -180 | -219 |
| 145 | -006 | -064 | -042 | 283 | 245 | 177 | 247 | -231 | -166 | 118 | 283 | -009 | 247 | 056 | 140 | -122 |
| 145 | -157 | -126 | -030 | -036 | 047 | -178 | 118 | 195 | -091 | 207 | -132 | 028 | -228 | 197 | -067 | 105 |
|  | 072 | 066 |  |  | 611 | -060 | -022 | 143 | -025 | 171 | -022 | 123 | -107 | -124 | -050 | -330 |
|  |  | 197 | 043 | 182 | 219 | 080 | 026 | -056 | 025 | -167 | 207 | 094 | 254 | -037 | -129 | 005 |
|  |  |  | 579 | 214 | 303 | 171 | -055 | 209 | -227 | 112 | 094 | 183 | 032 | 104 | 078 | 081 |
|  |  |  |  | 109 | 164 | 132 | -172 | 390 | -245 | 034 | -057 | 183 | -089 | 311 | 066 | 173 |
|  |  |  |  |  | 419 | 126 | 279 | -021 | -332 | 318 | 225 | 152 | 081 | 171 | -043 | -096 |
|  |  |  |  |  |  | -054 | 144 | 226 | -231 | 152 | 021 | 409 | -048 | -078 | -161 | -326 |
|  |  |  |  |  |  |  | -143 | -317 | -395 | 251 | 581 | 040 | 476 | 063 | 277 | 145 |
|  |  |  |  |  |  |  |  | -226 | -541 | 476 | 528 | 271 | 363 | -027 | -060 | 012 |
|  |  |  |  |  |  |  |  |  | -269 | -059 | -439 | 464 | -436 | 174 | -015 | 024 |
|  |  |  |  |  |  |  |  |  |  | -607 | -471 | -608 | -237 | -147 | -131 | -128 |
|  |  |  |  |  |  |  |  |  |  |  | 250 | 320 | -171 | 060 | 095 | 081 |
|  |  |  |  |  |  |  |  |  |  |  |  | 127 | 905 | -045 | 240 | 124 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -007 | 091 | -001 | 152 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -071 | 203 | 094 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -021 | 109 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 318 |

3

| 25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 272 | 010 | 265 | -018 | -005 | -117 | -087 | -098 | -074 | -092 | -273 | -266 | -011 | 048 | 028 | 065 | -068 |
| 020 | 281 | -049 | -189 | 047 | 006 | 175 | 048 | 368 | 321 | 092 | 043 | 052 | 139 | -082 | 071 | 257 |
| 134 | 157 | 156 | -279 | 036 | -190 | 219 | -002 | 495 | 428 | 059 | 045 | 020 | 047 | -123 | 052 | 391 |
| 109 | 110 | 112 | -190 | -080 | -199 | 164 | -083 | 562 | 219 | 104 | 054 | 060 | 073 | -063 | -067 | 507 |
| 244 | 049 | -275 | -134 | -010 | 057 | 027 | 360 | 023 | 187 | 547 | 492 | 050 | -080 | 190 | 166 | 183 |
| 285 | 106 | -317 | -058 | -038 | -014 | 133 | 130 | 201 | 254 | 525 | 475 | 046 | 116 | 022 | 068 | 263 |
| 276 | 081 | -309 | -104 | -026 | 024 | 082 | 262 | 113 | 230 | 563 | 508 | 050 | 014 | 116 | 125 | 232 |
| 011 | 153 | -033 | -343 | 006 | 115 | 119 | -112 | 185 | -015 | 043 | -028 | 075 | -077 | -216 | 084 | 167 |
| 228 | 295 | 131 | 076 | 137 | 432 | -334 | 138 | -268 | -123 | 036 | 061 | -027 | -040 | -028 | 007 | -119 |
| 126 | -027 | -221 | 204 | 088 | -026 | -153 | -009 | -029 | -011 | 045 | 170 | -119 | 150 | -010 | -378 | -160 |
| 061 | 012 | -028 | 007 | -130 | -219 | 234 | 098 | 231 | 325 | -068 | -086 | 016 | 279 | -018 | 119 | 272 |
| 283 | -009 | 247 | 056 | 140 | -122 | -081 | -010 | 149 | -062 | -207 | -046 | -154 | 172 | 016 | -014 | 155 |
| 132 | 028 | -228 | 197 | -067 | 105 | 114 | -089 | 086 | 085 | 122 | 090 | 035 | -138 | 084 | -350 | -108 |
| 022 | 123 | -107 | -124 | -050 | -330 | 310 | 097 | 484 | 445 | 016 | 166 | -135 | 219 | 094 | -079 | 429 |
| 207 | 094 | 254 | -037 | -129 | 005 | 325 | -016 | 339 | 351 | 077 | -036 | 111 | 159 | -111 | 121 | 487 |
| 094 | 183 | 032 | 104 | 078 | 081 | 068 | 197 | 090 | 258 | 080 | 186 | -106 | 219 | 024 | 202 | 271 |
| 057 | 183 | -089 | 311 | 066 | 173 | -160 | 026 | 027 | 136 | -026 | -004 | -024 | 182 | 100 | 177 | 061 |
| 225 | 152 | 081 | 171 | -043 | -096 | -052 | 314 | 119 | 180 | 336 | 151 | 182 | 453 | 157 | 146 | 269 |
| 021 | 409 | -048 | -078 | -161 | -326 | 193 | 078 | 698 | 606 | 121 | 146 | -017 | 287 | -068 | -006 | 609 |
| 581 | 040 | 476 | 063 | 277 | 145 | -141 | 520 | -230 | 008 | 004 | -146 | 144 | -029 | 347 | 080 | 047 |
| 528 | 271 | 363 | -027 | -060 | 012 | -183 | -077 | 143 | 047 | 036 | -045 | 078 | 100 | -198 | -149 | 072 |
| 439 | 464 | -436 | 174 | -015 | 024 | 172 | -195 | 086 | 335 | 209 | 151 | 054 | 230 | 205 | 213 | 026 |
| 471 | -608 | -237 | -147 | -131 | -128 | 204 | -225 | 042 | -289 | -217 | -000 | -208 | -256 | -236 | -055 | -062 |
| 250 | 320 | -171 | 060 | 095 | 081 | -171 | 281 | 042 | 233 | 217 | 029 | 178 | 235 | 277 | -089 | 078 |
|  | 127 | 905 | -045 | 240 | 124 | -146 | 242 | -046 | -058 | -104 | -253 | 145 | -031 | 098 | 082 | 141 |
|  |  | -007 | 091 | -001 | 152 | 082 | -017 | 140 | 351 | 222 | 154 | 067 | 022 | 117 | 188 | 120 |
|  |  |  | -071 | 203 | 094 | -084 | 135 | -059 | -171 | -218 | -248 | 033 | -151 | -038 | 113 | 099 |
|  |  |  |  | -021 | 109 | -234 | 037 | -217 | -101 | -100 | 050 | -150 | 166 | 200 | -013 | -231 |
|  |  |  |  |  | 318 | -070 | 102 | -147 | -090 | -140 | -135 | -005 | 045 | 062 | 001 | -113 |
|  |  |  |  |  |  | -191 | 034 | -215 | -299 | 116 | -075 | 177 | -289 | 023 | 372 | -080 |
|  |  |  |  |  |  |  | -110 | 328 | 281 | 105 | 291 | -174 | -003 | -101 | 063 | 352 |
|  |  |  |  |  |  |  |  | -143 | 259 | 412 | 160 | 239 | 088 | 441 | 217 | 044 |
|  |  |  |  |  |  |  |  |  | 521 | 072 | 111 | -029 | 151 | -221 | -012 | 738 |
|  |  |  |  |  |  |  |  |  |  | 269 | 135 | 130 | 259 | 093 | 080 | 553 |
|  |  |  |  |  |  |  |  |  |  |  | 463 | 517 | 052 | 141 | 117 | 020 |
|  |  |  |  |  |  |  |  |  |  |  |  | -520 | -197 | 004 | -070 | -028 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 238 | 127 | 174 | 049 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -017 | 084 | 222 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 111 | -100 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 309 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 030 | 198 | 315 | 078 | -007 | 037 | -098 | 023 | 238 | 201 | 248 | 153 | 220 |
| 2 | | | 430 | 227 | 016 | 257 | 144 | 204 | -142 | 040 | -046 | 135 | 258 | 263 |
| 3 | | | | 108 | 079 | 122 | 106 | 086 | -256 | 249 | 085 | -063 | 043 | 466 |
| 4 | | | | | -023 | 118 | 050 | -024 | 150 | 199 | 183 | 143 | -062 | 233 |
| 5 | | | | | | 796 | 948 | -289 | 073 | -088 | 003 | -006 | 094 | -182 |
| 6 | | | | | | | 948 | -315 | 020 | -084 | 032 | 115 | 119 | -015 |
| 7 | | | | | | | | -319 | 052 | -091 | 019 | 058 | 113 | -104 |
| 8 | | | | | | | | | 047 | 300 | 095 | 097 | -051 | -125 |
| 9 | | | | | | | | | | 110 | 107 | 034 | -421 | -288 |
| 10 | | | | | | | | | | | 165 | 118 | -285 | 015 |
| 11 | | | | | | | | | | | | 225 | -248 | 369 |
| 12 | | | | | | | | | | | | | 126 | 079 |
| 13 | | | | | | | | | | | | | | 331 |
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| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |

2

## RAW SCORE MATRIX--PRE-FRESHMAN GIRLS (N = 41)

| (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 220 | 178 | 282 | 407 | 138 | 088 | 390 | 004 | -258 | -012 | 217 | 164 | -020 | 041 | 357 | 200 | -140 |
| 263 | 139 | -100 | -206 | 094 | 343 | -079 | 108 | 193 | -215 | 075 | -182 | 194 | -258 | 077 | -026 | -290 |
| 466 | 029 | -026 | 027 | 193 | 406 | 075 | -295 | 148 | 067 | -167 | -124 | -083 | 003 | 062 | 119 | -150 |
| 233 | 336 | -112 | 162 | 140 | 355 | -130 | 236 | -410 | 207 | 306 | 090 | -093 | -128 | 170 | 093 | -084 |
| -182 | 071 | 102 | 133 | -171 | -191 | 297 | 059 | -272 | -003 | 234 | 210 | -206 | 071 | -027 | 250 | 345 |
| -015 | 074 | 174 | 039 | -207 | -114 | 095 | 135 | -218 | -001 | 175 | 081 | -198 | -035 | -042 | 238 | 276 |
| -104 | 076 | 146 | 091 | -199 | -161 | 207 | 102 | -259 | -002 | 215 | 153 | -213 | 019 | -036 | 258 | 328 |
| -125 | 005 | -468 | -382 | -038 | 114 | -155 | -138 | 329 | -085 | -226 | -279 | 122 | -165 | 190 | -120 | -148 |
| -288 | -006 | 068 | 066 | -027 | -187 | 315 | 187 | -347 | -076 | 338 | 229 | -249 | -007 | -178 | -010 | 173 |
| 015 | -228 | -026 | -109 | 234 | 205 | 081 | 004 | -077 | -024 | -005 | 141 | -137 | 153 | 139 | 379 | -266 |
| 369 | -211 | 114 | -084 | 250 | 390 | -084 | -009 | -143 | 170 | 046 | -040 | -062 | -092 | 134 | 095 | 267 |
| 079 | 108 | 119 | -052 | -001 | 017 | -056 | -047 | -222 | 228 | 046 | -127 | -047 | -187 | -208 | -148 | -213 |
| 331 | 497 | -028 | -084 | -125 | -059 | -157 | 116 | 001 | -004 | 043 | -103 | 070 | -167 | -012 | -251 | -117 |
|  | 267 | 173 | 038 | 484 | 558 | -348 | 154 | 032 | 048 | 024 | -111 | 080 | -153 | -068 | -073 | -115 |
|  |  | 096 | 278 | -007 | 068 | -188 | 390 | -090 | -130 | 301 | 172 | 181 | -020 | 079 | -101 | -001 |
|  |  |  | 412 | 137 | -033 | 132 | 249 | -155 | -140 | 347 | 199 | -040 | -017 | 072 | 311 | -172 |
|  |  |  |  | 041 | -039 | 087 | 344 | -195 | -167 | 342 | 298 | 114 | 125 | 242 | 250 | -040 |
|  |  |  |  |  | 492 | -072 | 324 | -067 | -146 | 203 | 119 | 172 | -027 | -129 | 231 | -126 |
|  |  |  |  |  |  | -216 | 139 | 211 | -184 | 135 | -066 | 279 | -179 | 068 | 028 | -200 |
|  |  |  |  |  |  |  | -202 | -206 | -249 | 210 | 410 | -061 | 334 | 093 | 129 | 068 |
|  |  |  |  |  |  |  |  | -253 | -508 | 714 | 584 | 252 | 153 | 066 | 342 | 072 |
|  |  |  |  |  |  |  |  |  | -497 | -319 | -431 | 569 | -265 | 168 | -271 | -159 |
|  |  |  |  |  |  |  |  |  |  | -461 | -381 | -629 | -111 | -238 | -118 | 040 |
|  |  |  |  |  |  |  |  |  |  |  | 573 | 073 | -081 | 063 | 239 | -048 |
|  |  |  |  |  |  |  |  |  |  |  |  | 082 | 767 | 079 | 414 | 222 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 069 | 229 | -025 | -151 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 072 | 331 | 271 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 293 | 017 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 031 |

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| (25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 164 | -020 | 041 | 357 | 200 | -140 | 121 | 039 | 122 | 273 | -329 | -129 | -075 | 037 | 122 | 001 | 017 |
| -182 | 194 | -258 | 077 | -026 | -290 | 231 | -137 | 251 | 192 | 106 | -079 | 142 | 077 | -209 | 129 | 294 |
| -124 | -083 | 003 | 062 | 119 | -150 | 198 | -021 | 239 | 228 | -104 | -025 | -028 | 027 | -004 | -083 | 230 |
| 090 | -093 | -128 | 170 | 093 | -084 | 377 | 092 | 512 | 402 | 023 | 127 | -112 | -055 | -039 | -021 | 372 |
| 210 | -206 | 071 | -027 | 250 | 345 | -269 | 226 | 128 | -033 | 291 | 050 | 136 | -040 | 296 | 006 | -018 |
| 081 | -198 | -035 | -042 | 238 | 276 | -162 | 187 | 236 | 053 | 173 | 082 | 029 | 033 | 152 | 154 | 185 |
| 153 | -213 | 019 | -036 | 258 | 328 | -227 | 218 | 192 | 011 | 244 | 070 | 087 | -004 | 236 | 084 | 088 |
| -279 | 122 | -165 | 190 | -120 | -148 | 007 | -079 | -230 | -091 | 072 | 165 | -112 | -037 | -165 | -168 | -284 |
| 229 | -249 | -007 | -178 | -010 | 173 | -089 | -038 | -056 | -249 | 129 | 058 | 036 | -026 | 090 | -168 | -258 |
| 141 | -137 | 153 | 139 | 379 | -266 | -065 | 223 | 010 | 026 | -285 | -176 | -003 | -164 | -018 | 191 | -247 |
| -040 | -062 | -092 | 134 | 095 | 267 | 118 | -097 | 307 | 308 | -232 | -165 | 008 | 060 | -065 | -019 | 162 |
| -127 | -047 | -187 | -208 | -148 | -213 | 108 | -047 | 109 | 029 | -235 | -074 | -092 | 417 | -182 | 000 | -019 |
| -103 | 070 | -167 | -012 | -251 | -117 | -010 | -248 | -021 | 166 | 075 | 205 | -160 | 218 | 248 | 146 | 264 |
| -111 | 080 | -153 | -068 | -073 | -115 | 206 | -012 | 360 | 562 | -150 | 003 | -099 | 197 | 053 | 068 | 571 |
| 172 | 181 | -020 | 079 | -101 | -001 | 113 | 228 | 202 | 311 | 139 | 190 | -104 | 170 | 225 | -154 | 315 |
| 199 | -040 | -017 | 072 | 311 | -172 | -065 | 122 | 030 | 145 | -317 | -366 | 161 | 050 | 088 | 130 | 130 |
| 298 | 114 | 125 | 242 | 250 | -040 | -034 | 346 | 104 | 329 | -161 | -064 | -032 | 039 | 340 | -327 | -052 |
| 119 | 172 | -027 | -129 | 231 | -126 | 133 | 046 | 316 | 452 | -255 | 087 | -257 | -094 | -045 | 120 | 225 |
| -066 | 279 | -179 | 068 | 028 | -200 | 308 | -030 | 525 | 553 | -148 | 154 | -236 | -035 | -315 | 078 | 583 |
| 410 | -061 | 334 | 093 | 129 | 068 | -069 | 050 | -144 | -310 | -018 | -178 | 182 | -151 | 030 | -081 | -311 |
| 584 | 252 | 153 | 066 | 342 | 072 | -044 | 148 | 214 | 439 | -071 | 088 | -140 | 015 | 245 | 009 | 189 |
| -431 | 569 | -265 | 168 | -271 | -159 | -161 | 073 | -109 | -076 | 161 | 064 | 042 | -124 | -326 | 041 | 076 |
| -381 | -629 | -111 | -238 | -118 | 040 | 220 | -213 | 012 | -104 | -078 | -045 | -011 | 165 | 058 | 034 | -013 |
| 573 | 073 | -081 | 063 | 239 | -048 | 083 | 105 | 350 | 275 | -094 | 072 | -133 | 097 | 031 | 003 | 272 |
|  | 082 | 767 | 079 | 414 | 222 | -048 | 263 | 018 | 174 | -103 | -125 | 060 | -032 | 270 | -135 | -131 |
|  |  | 069 | 229 | -025 | -151 | 008 | 225 | 111 | 272 | 169 | -004 | 097 | -035 | -176 | -161 | 072 |
|  |  |  | 072 | 331 | 271 | -101 | 255 | -249 | 006 | -071 | -214 | 172 | -080 | 271 | -185 | -360 |
|  |  |  |  | 293 | 017 | 028 | 246 | 065 | 153 | -135 | -058 | -013 | -262 | -057 | -028 | 064 |
|  |  |  |  |  | 031 | -171 | 216 | 142 | 164 | -253 | -161 | -001 | -170 | 284 | 005 | -037 |
|  |  |  |  |  |  | -373 | 011 | -002 | 024 | 229 | -001 | 148 | -265 | 423 | -146 | -034 |
|  |  |  |  |  |  |  | -211 | 223 | 250 | -068 | 133 | -190 | 054 | -302 | -010 | 234 |
|  |  |  |  |  |  |  |  | -026 | 129 | 102 | -079 | 143 | -184 | 076 | -080 | -069 |
|  |  |  |  |  |  |  |  |  | 367 | -176 | -012 | -104 | -009 | -211 | 057 | 633 |
|  |  |  |  |  |  |  |  |  |  | -238 | -086 | -068 | -042 | 178 | 219 | 533 |
|  |  |  |  |  |  |  |  |  |  |  | 274 | 345 | -205 | 202 | -310 | -153 |
|  |  |  |  |  |  |  |  |  |  |  |  | -805 | 128 | -039 | -171 | 123 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -267 | 169 | -007 | -206 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -254 | -150 | 116 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -126 | -220 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 394 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  | -048 | -164 | 103 | -092 | -184 | -144 | -013 | 008 | 079 | 166 | 173 | -077 | 125 |
| 2 |  |  | -006 | 243 | -093 | -036 | -076 | 045 | 119 | -030 | -102 | -030 | -162 | 005 |
| 3 |  |  |  | 070 | 014 | 139 | 074 | 205 | -125 | 001 | -150 | 026 | 199 | 180 |
| 4 |  |  |  |  | -089 | 196 | 035 | 126 | 108 | 190 | 015 | -010 | -131 | 142 |
| 5 |  |  |  |  |  | 635 | 934 | 337 | 032 | -060 | 093 | -137 | 193 | 112 |
| 6 |  |  |  |  |  |  | 870 | 284 | -020 | 012 | -075 | -151 | 034 | 091 |
| 7 |  |  |  |  |  |  |  | 347 | 011 | -033 | 025 | -158 | 139 | 113 |
| 8 |  |  |  |  |  |  |  |  | 008 | 187 | -111 | 093 | -115 | 303 |
| 9 |  |  |  |  |  |  |  |  |  | -161 | 105 | -169 | 042 | -025 |
| 10 |  |  |  |  |  |  |  |  |  |  | 025 | -091 | -166 | 157 |
| 11 |  |  |  |  |  |  |  |  |  |  |  | 055 | -100 | 012 |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  | -093 | -130 |
| 13 |  |  |  |  |  |  |  |  |  |  |  |  |  | -014 |
| 14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 41 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

RAW SCORE MATRIX--FRESHMAN BOYS (N = 79)

| (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 125 | 092 | -103 | -241 | 173 | 070 | 229 | 144 | -030 | -203 | 159 | 164 | -026 | 109 | 111 | -069 | 013 |
| 005 | -160 | -099 | 098 | -129 | -031 | -037 | 221 | -091 | -122 | 056 | 177 | 016 | 183 | 091 | -035 | -032 |
| 180 | 047 | -099 | 146 | 090 | 059 | -112 | -013 | 146 | -036 | -092 | -172 | 018 | -169 | -252 | -129 | -209 |
| 142 | 170 | 031 | 163 | -032 | 095 | 193 | 111 | 040 | -224 | 164 | 211 | 099 | 177 | 183 | 097 | 177 |
| 112 | 205 | 200 | 226 | 078 | 086 | 219 | 103 | -142 | -085 | 180 | 228 | 160 | 171 | -288 | 112 | 113 |
| 091 | 124 | 164 | 240 | -066 | 061 | 268 | -060 | 135 | -156 | 082 | 110 | 231 | 110 | -180 | 217 | 033 |
| 113 | 188 | 203 | 256 | 019 | 083 | 264 | 038 | -028 | -127 | 152 | 196 | 210 | 160 | -268 | 172 | 088 |
| 303 | 178 | 191 | 293 | -000 | 259 | 219 | -034 | -094 | -009 | 118 | 122 | 104 | 078 | -141 | 126 | 039 |
| -025 | -001 | 020 | -091 | -202 | 002 | 142 | -047 | -054 | -007 | -016 | 076 | 081 | 084 | 087 | 071 | 381 |
| 157 | -199 | 098 | -001 | 122 | 074 | 150 | -193 | 025 | 030 | 040 | -028 | -126 | -063 | -112 | 041 | 108 |
| 012 | 107 | 107 | -126 | 233 | 176 | 055 | 222 | -202 | -068 | 220 | 120 | -014 | 033 | 023 | -011 | -123 |
| -130 | 017 | -037 | -019 | -154 | -154 | 037 | 258 | 072 | -275 | 128 | 124 | 221 | 084 | 093 | 173 | -069 |
| -014 | 186 | 100 | 080 | 084 | -045 | -046 | 115 | -029 | -045 | -025 | -039 | 080 | -056 | -005 | 010 | 037 |
|  | 253 | 009 | -126 | 250 | 471 | 102 | 015 | 100 | -131 | 113 | 025 | 092 | -043 | -299 | -117 | -163 |
|  |  | 124 | 297 | 043 | 339 | -064 | 038 | -024 | 040 | -048 | -061 | 017 | -049 | -158 | -084 | -015 |
|  |  |  | 544 | 185 | -124 | -051 | 092 | -182 | 096 | 090 | 196 | -038 | 210 | -055 | 207 | 162 |
|  |  |  |  | 024 | 010 | -099 | 031 | -269 | 220 | 009 | 096 | -221 | 121 | -126 | 096 | 060 |
|  |  |  |  |  | 417 | -041 | 068 | 039 | -061 | 060 | 031 | 005 | -020 | -015 | -184 | -032 |
|  |  |  |  |  |  | 168 | -036 | 039 | -061 | 081 | -005 | 111 | -058 | -076 | -211 | -156 |
|  |  |  |  |  |  |  | 096 | -247 | -392 | 388 | 531 | 181 | 407 | 094 | 238 | 045 |
|  |  |  |  |  |  |  |  | -209 | -705 | 707 | 728 | 392 | 502 | 022 | 019 | 070 |
|  |  |  |  |  |  |  |  |  | -370 | -172 | -389 | 490 | -365 | 067 | -062 | -031 |
|  |  |  |  |  |  |  |  |  |  | -638 | -576 | -706 | -349 | -110 | -080 | -067 |
|  |  |  |  |  |  |  |  |  |  |  | 608 | 328 | 181 | 018 | 105 | 004 |
|  |  |  |  |  |  |  |  |  |  |  |  | 302 | 885 | 027 | 182 | 183 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 192 | 170 | 121 | 155 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 019 | 185 | 234 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 136 | 141 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 283 |

| (25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 164 | -026 | 109 | 111 | -069 | 013 | 102 | 260 | 261 | 071 | -198 | -114 | -035 | -118 | 104 | 110 | 129 |
| 177 | 016 | 183 | 091 | -035 | -032 | -013 | -040 | 071 | -046 | 085 | 161 | -077 | 127 | 053 | -100 | 084 |
| -172 | 018 | -169 | -252 | -129 | -209 | -074 | -162 | 215 | 234 | 028 | 058 | -036 | 025 | -057 | 046 | 143 |
| 211 | 099 | 177 | 183 | 097 | 177 | -013 | -036 | 403 | 032 | 091 | 046 | 025 | 130 | -195 | 046 | 197 |
| 228 | 160 | 171 | -288 | 112 | 113 | 067 | -019 | 041 | 078 | 363 | 249 | 029 | -131 | -135 | 010 | 121 |
| 110 | 231 | 110 | -180 | 217 | 033 | 010 | -084 | 140 | 202 | 418 | 334 | -007 | 018 | -206 | -020 | 066 |
| 196 | 210 | 160 | -268 | 172 | 088 | 047 | -052 | 091 | 143 | 426 | 314 | 015 | -075 | -182 | -003 | 107 |
| 122 | 104 | 078 | -141 | 126 | 039 | 123 | -099 | 180 | 171 | 098 | 234 | -134 | 203 | -107 | -050 | 144 |
| 076 | 081 | 084 | 087 | 071 | 381 | 039 | -080 | -136 | -373 | 057 | 004 | 039 | 121 | 058 | -234 | 036 |
| -028 | -126 | -063 | -112 | 041 | 108 | 054 | 014 | 367 | 198 | 132 | 003 | 089 | 202 | 012 | 145 | 096 |
| 120 | -014 | 033 | 023 | -011 | -123 | 053 | 255 | 079 | -019 | -100 | -283 | 179 | -067 | -054 | 120 | 278 |
| 124 | 221 | 084 | 093 | 173 | -069 | 140 | 138 | -151 | 008 | -088 | 145 | -189 | -140 | -059 | -043 | 022 |
| -039 | 080 | -056 | -005 | 010 | 037 | -089 | -110 | -196 | 109 | 099 | 158 | -077 | -123 | -008 | -015 | -010 |
| 025 | 092 | -043 | -299 | -117 | -163 | -037 | -073 | 419 | 222 | 107 | -076 | 144 | 117 | -320 | 087 | 411 |
| -061 | 017 | -049 | -158 | -084 | -015 | 158 | -031 | 287 | 252 | -065 | -008 | -036 | -223 | -191 | 127 | 467 |
| 196 | -038 | 210 | -055 | 207 | 162 | -227 | -167 | 030 | 128 | 168 | -008 | 122 | -226 | -277 | 250 | 113 |
| 096 | -221 | 121 | -126 | 096 | 060 | -109 | -171 | 097 | 229 | 089 | 158 | -075 | -181 | -143 | 124 | 088 |
| 031 | 005 | -020 | -015 | -184 | -032 | 164 | -047 | 189 | 285 | 044 | -258 | 257 | -242 | -233 | 232 | 257 |
| -005 | 111 | -058 | -076 | -211 | -156 | 130 | -149 | 421 | 431 | 003 | 033 | -017 | 100 | 029 | -071 | 325 |
| 531 | 181 | 407 | 094 | 238 | 045 | 090 | 019 | -066 | 010 | 102 | 148 | -053 | -049 | -032 | -080 | -033 |
| 728 | 392 | 502 | 022 | 019 | 070 | 072 | 046 | -114 | 038 | 117 | 018 | 066 | -112 | -240 | -108 | 142 |
| -389 | 490 | -365 | 067 | -062 | -031 | 059 | -200 | 069 | 048 | 033 | 160 | -113 | 227 | -024 | 008 | -017 |
| -576 | -706 | -349 | -110 | -080 | -067 | -150 | 070 | 074 | -044 | -165 | -187 | 044 | -051 | 218 | 135 | -078 |
| 608 | 328 | 181 | 018 | 105 | 004 | 112 | 174 | -058 | 168 | 093 | 028 | 040 | -113 | -209 | -070 | 105 |
|  | 302 | 885 | 027 | 182 | 183 | 120 | 049 | -134 | -063 | 262 |  |  | -029 | -171 | -187 | 003 |
|  |  | 192 | 170 | 121 | 155 | 169 | -279 | -120 | 083 | 166 | 310 | -154 | 159 | -039 | -130 | 016 |
|  |  |  | 019 | 185 | 234 | 074 | -043 | -138 | -185 | 275 | 093 | 109 | 033 | -086 | -198 | -065 |
|  |  |  |  | 136 | 141 | 031 | 001 | -271 | -116 | -182 | 111 | -218 | 029 | 120 | -019 | -223 |
|  |  |  |  |  | 283 | -201 | 042 | -132 | -239 | 034 | 135 | -101 | -072 | -218 | -042 | -179 |
|  |  |  |  |  |  | 069 | -009 | -081 | -258 | 259 | 164 | 029 | -093 | -116 | 030 | -114 |
|  |  |  |  |  |  |  | 161 | -095 | -010 | -052 | -029 | -010 | -009 | 074 | -134 | 105 |
|  |  |  |  |  |  |  |  | -065 | -039 | -082 | -283 | 181 | -078 | -173 | 044 | -055 |
|  |  |  |  |  |  |  |  |  | 397 | 034 | -087 | 103 | 127 | -032 | 252 | 526 |
|  |  |  |  |  |  |  |  |  |  | 164 | 076 | 043 | -021 | 031 | 251 | 341 |
|  |  |  |  |  |  |  |  |  |  |  | 180 | 518 | 033 | -165 | 078 | 026 |
|  |  |  |  |  |  |  |  |  |  |  |  | -746 | 045 | 210 | -190 | -254 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -009 | -295 | 214 | 241 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 120 | -088 | -017 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -262 | -152 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 388 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | -145 | -312 | 190 | -404 | -497 | -468 | -380 | 062 | -211 | 157 | 347 | 032 | -093 | -033 |
| 2 | | | 366 | 006 | 102 | 156 | 132 | 175 | 137 | 098 | -201 | 030 | -062 | -008 | 082 |
| 3 | | | | 124 | 252 | 393 | 331 | 201 | 038 | 093 | -032 | -209 | 128 | 136 | 184 |
| 4 | | | | | -086 | 003 | -048 | 203 | 052 | -202 | -001 | 281 | 087 | 195 | 176 |
| 5 | | | | | | 815 | 962 | 281 | -153 | 034 | -010 | -213 | 009 | -128 | -037 |
| 6 | | | | | | | 942 | 374 | 026 | -015 | -001 | -247 | 109 | -022 | -088 |
| 7 | | | | | | | | 338 | -077 | 012 | -006 | -240 | 056 | -085 | -063 |
| 8 | | | | | | | | | 146 | 115 | 125 | 001 | 215 | 074 | 159 |
| 9 | | | | | | | | | | -214 | 129 | 250 | 053 | 150 | 180 |
| 10 | | | | | | | | | | | 008 | -130 | -032 | -036 | 187 |
| 11 | | | | | | | | | | | | 084 | 048 | -015 | 122 |
| 12 | | | | | | | | | | | | | -184 | 169 | 028 |
| 13 | | | | | | | | | | | | | | 194 | 203 |
| 14 | | | | | | | | | | | | | | | 430 |
| 15 | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | | |

RAW SCORE MATRIX--FRESHMAN GIRLS (N = 65)

| 15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) | (31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 033 | 143 | 076 | -030 | -109 | -023 | 111 | -050 | -009 | 325 | -042 | -045 | -150 | 182 | 123 | 126 | 032 |
| 082 | -253 | -182 | -123 | 064 | -159 | 055 | 214 | -133 | -175 | 007 | 200 | 068 | -051 | -094 | -047 | -172 |
| 184 | -038 | -154 | 008 | 158 | 095 | 240 | 009 | -195 | -084 | 290 | 168 | 361 | -177 | 139 | 066 | 028 |
| 176 | -094 | 056 | -151 | -010 | -198 | -077 | -005 | 158 | -063 | -149 | -127 | -116 | -066 | 016 | 332 | 110 |
| 037 | -049 | 031 | -114 | -104 | 150 | 056 | -152 | 031 | 003 | 111 | 109 | 129 | -209 | 055 | 083 | 180 |
| 088 | -125 | -036 | -146 | -031 | 078 | 050 | -016 | -049 | -121 | 128 | 158 | 196 | -173 | 087 | 024 | -018 |
| 063 | -087 | 001 | -135 | -075 | 124 | 056 | -095 | -010 | -055 | 125 | 137 | 166 | -202 | 073 | 060 | 096 |
| 159 | -145 | -069 | 028 | 060 | 111 | 001 | -043 | -035 | 078 | 076 | 082 | 044 | -089 | 028 | 024 | 059 |
| 180 | -032 | -020 | -044 | -050 | 131 | 209 | 148 | -340 | 197 | 156 | 302 | 114 | 099 | 271 | 130 | -139 |
| 187 | -035 | -103 | 172 | -057 | -117 | -095 | -021 | 147 | -168 | -018 | -154 | 027 | -026 | -269 | -345 | -017 |
| 122 | 079 | -151 | 277 | 137 | -018 | -138 | -034 | 124 | 019 | -097 | -077 | -111 | 088 | 051 | -082 | 108 |
| 028 | -085 | 118 | -107 | -113 | -028 | -004 | -042 | 046 | 099 | 071 | -093 | 029 | 060 | 171 | 254 | 072 |
| 203 | -137 | -071 | 253 | 357 | 150 | -163 | 002 | 002 | -013 | -019 | 165 | -022 | 119 | 096 | 092 | -035 |
| 430 | -050 | 043 | 289 | 537 | 067 | -044 | 064 | -080 | -114 | 019 | 059 | 058 | 081 | -032 | 129 | 024 |
|  | 332 | 185 | 264 | 501 | 000 | 030 | -066 | 032 | 042 | -032 | -049 | -039 | 019 | -053 | 048 | 112 |
|  |  | 572 | -007 | -016 | 148 | 164 | -018 | -178 | 125 | 121 | 015 | 122 | -099 | -030 | -129 | 139 |
|  |  |  | -040 | -005 | 136 | 274 | -005 | -250 | 229 | 192 | 106 | 140 | 057 | -054 | 112 | 162 |
|  |  |  |  | 494 | 190 | -054 | -240 | 137 | -022 | 139 | -187 | 174 | -038 | -009 | 026 | 059 |
|  |  |  |  |  | -041 | -115 | 025 | 058 | -096 | -099 | 003 | -076 | 169 | 011 | 025 | 094 |
|  |  |  |  |  |  | 194 | -260 | -472 | 494 | 750 | 314 | 660 | 050 | 281 | 044 | 061 |
|  |  |  |  |  |  |  | -348 | -393 | 650 | 656 | 087 | 528 | -049 | 122 | -096 | 016 |
|  |  |  |  |  |  |  |  | -536 | -287 | -397 | 606 | -358 | 219 | -107 | -064 | -136 |
|  |  |  |  |  |  |  |  |  | -416 | -480 | -771 | -392 | -209 | -127 | 098 | 067 |
|  |  |  |  |  |  |  |  |  |  | 560 | 158 | 259 | 088 | 172 | -011 | 064 |
|  |  |  |  |  |  |  |  |  |  |  | 174 | 939 | -039 | 237 | -031 | 025 |
|  |  |  |  |  |  |  |  |  |  |  |  | 125 | 273 | 162 | -004 | -062 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -091 | 214 | -022 | 009 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -102 | -125 | -005 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 363 | -080 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 292 |

| 26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 045 | -150 | 182 | 123 | 126 | 032 | 151 | 005 | 117 | -426 | -382 | 041 | -067 | 043 | 158 | 040 |
| 200 | 068 | -051 | -094 | -047 | -172 | -015 | -067 | -022 | 224 | 286 | -182 | 177 | 036 | 115 | 067 |
| 168 | 361 | -177 | 139 | 066 | 028 | -143 | 262 | 238 | 288 | 210 | 041 | 033 | -047 | 033 | 236 |
| 127 | -116 | -066 | 016 | 332 | 110 | 070 | 176 | 278 | -073 | -232 | 219 | 161 | 133 | 265 | 279 |
| 109 | 129 | -209 | 055 | 083 | 180 | 016 | 073 | -146 | 539 | 453 | 038 | 116 | -128 | -179 | -007 |
| 158 | 196 | -173 | 087 | 024 | -018 | -057 | 109 | -009 | 501 | 345 | 135 | 149 | -072 | -172 | -011 |
| 137 | 166 | -202 | 073 | 060 | 096 | -018 | 093 | -089 | 547 | 425 | 086 | 137 | -108 | -184 | -010 |
| 082 | 044 | -089 | 028 | 024 | 059 | 027 | 073 | 000 | 210 | 103 | 144 | -037 | -165 | 045 | 064 |
| 302 | 114 | 099 | 271 | 130 | -139 | -030 | -040 | -009 | -035 | 103 | -107 | 148 | 039 | -009 | -004 |
| 154 | 027 | -026 | -269 | -345 | -017 | -086 | -310 | -070 | 069 | 156 | -101 | -209 | -006 | -250 | -212 |
| 077 | -111 | 088 | 051 | -082 | 108 | -002 | 190 | 107 | -056 | -136 | 084 | 046 | -026 | -267 | 038 |
| 093 | 029 | 060 | 171 | 254 | 072 | 099 | -038 | -031 | -209 | -290 | 060 | 154 | 106 | -025 | -025 |
| 165 | -022 | 119 | 096 | 092 | -035 | 084 | 204 | 230 | -022 | -137 | 229 | -117 | -062 | 037 | 171 |
| 059 | 058 | 081 | -032 | 129 | 024 | -158 | 492 | 235 | -121 | -269 | 146 | 133 | -035 | 112 | 598 |
| 049 | -039 | 019 | -053 | 048 | 112 | 066 | 254 | 109 | -189 | -073 | -087 | -107 | -039 | 073 | 386 |
| 015 | 122 | -099 | -030 | -129 | 139 | 009 | 046 | -127 | -282 | -039 | -168 | -199 | 083 | -057 | -081 |
| 106 | 140 | 057 | -054 | 112 | 162 | 191 | -114 | -014 | -221 | -143 | 023 | -107 | 239 | -056 | -081 |
| 187 | 174 | -038 | -009 | 026 | 059 | 053 | 108 | 067 | -032 | -014 | 004 | -162 | -160 | -170 | 198 |
| 003 | -076 | 169 | 011 | 025 | 094 | 112 | 479 | 209 | -194 | -208 | 023 | -032 | -060 | -010 | 453 |
| 314 | 660 | 050 | 281 | 044 | 061 | 013 | 158 | -052 | -005 | 055 | 003 | -086 | -209 | -100 | -046 |
| 087 | 528 | -049 | 122 | -096 | 016 | -006 | -020 | -058 | -064 | 138 | -109 | -021 | -012 | 067 | 126 |
| 506 | -358 | 219 | -107 | -064 | -136 | 038 | 030 | 070 | -044 | 085 | -148 | -038 | 138 | -113 | -192 |
| 771 | -392 | -209 | -127 | 098 | 067 | -068 | -104 | 006 | 111 | -168 | 206 | 101 | 022 | 109 | 121 |
| 158 | 259 | 088 | 172 | -011 | 064 | 097 | 057 | -038 | -174 | -113 | 086 | -114 | -071 | 007 | 048 |
| 174 | 939 | -039 | 237 | -031 | 025 | -032 | 053 | -085 | 003 | 065 | 026 | -148 | -104 | -092 | -016 |
|  | 125 | 273 | 162 | -004 | -062 | 080 | 126 | 115 | 046 | 175 | -093 | -029 | 030 | -192 | -159 |
|  |  | -091 | 214 | -022 | 009 | -065 | 050 | -084 | 056 | 130 | -023 | -123 | -099 | -091 | -013 |
|  |  |  | -102 | -125 | -005 | 146 | -007 | -024 | -213 | -210 | 001 | -117 | -118 | -199 | -070 |
|  |  |  |  | 363 | -080 | -007 | 110 | -078 | 046 | 057 | -035 | 110 | 063 | -048 | -038 |
|  |  |  |  |  | 292 | 224 | 169 | 229 | 170 | -044 | 162 | 085 | -144 | 152 | 282 |
|  |  |  |  |  |  | 278 | 146 | 153 | -003 | -086 | 117 | -034 | -251 | 091 | 214 |
|  |  |  |  |  |  |  | -025 | 023 | -113 | -183 | 109 | -303 | -080 | 082 | 051 |
|  |  |  |  |  |  |  |  | 438 | -029 | -256 | 306 | 056 | -194 | 118 | 583 |
|  |  |  |  |  |  |  |  |  | 182 | -110 | 389 | -120 | -138 | 189 | 425 |
|  |  |  |  |  |  |  |  |  |  | 566 | 315 | -095 | -128 | -055 | 076 |
|  |  |  |  |  |  |  |  |  |  |  | -526 | 132 | -138 | -076 | -176 |
|  |  |  |  |  |  |  |  |  |  |  |  | -350 | 097 | 054 | 264 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 004 | 062 | 066 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -002 | -211 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 424 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | -270 | -334 | 019 | -099 | -288 | -188 | -070 | 184 | 031 | 368 | 268 | 150 | 271 |
| 2 | | | 336 | 088 | 043 | 221 | 138 | 173 | -001 | 079 | -019 | -083 | -157 | 183 |
| 3 | | | | 139 | -275 | -158 | -233 | 022 | -252 | 043 | 041 | 092 | -118 | 226 |
| 4 | | | | | -182 | -086 | -154 | 017 | 156 | 088 | 191 | 065 | 246 | 175 |
| 5 | | | | | | 731 | 936 | 054 | 077 | -011 | 035 | -517 | -086 | -077 |
| 6 | | | | | | | 919 | 262 | 112 | 241 | -060 | -399 | 099 | 099 |
| 7 | | | | | | | | 140 | 082 | 121 | -005 | -485 | 010 | 007 |
| 8 | | | | | | | | | 109 | 194 | -065 | 007 | 057 | 139 |
| 9 | | | | | | | | | | 022 | 074 | 133 | 228 | 167 |
| 10 | | | | | | | | | | | -082 | 088 | 023 | 176 |
| 11 | | | | | | | | | | | | 093 | -025 | 538 |
| 12 | | | | | | | | | | | | | 056 | 353 |
| 13 | | | | | | | | | | | | | | 075 |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |

2

## RAW SCORE MATRIX--SOPHOMORE BOYS (N = 46)

| (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 150 | 271 | -099 | -245 | -249 | 129 | 133 | 236 | 065 | -135 | -066 | 181 | 272 | 077 | 239 | -082 | 299 |
| -157 | 183 | 102 | 132 | 017 | -042 | 051 | -143 | -086 | 254 | -038 | -218 | -184 | -222 | -099 | -135 | -018 |
| -118 | 226 | 348 | 307 | 280 | -074 | -026 | -179 | -109 | 148 | 063 | -120 | -208 | -115 | -156 | 151 | -064 |
| 246 | 175 | -016 | -076 | -070 | -203 | -057 | -001 | -046 | -193 | 171 | -036 | 007 | -335 | -003 | 071 | 137 |
| -086 | -077 | -215 | -010 | 179 | -017 | 018 | -089 | 15[illegible] | -083 | -007 | 099 | 035 | 241 | -014 | -430 | -073 |
| 099 | 099 | -215 | 149 | 000 | -151 | -025 | 073 | 159 | 160 | -237 | 199 | 040 | 348 | -118 | -291 | -394 |
| 010 | 007 | -224 | 056 | 099 | -084 | -006 | -021 | 176 | 036 | -127 | 170 | 044 | 320 | -071 | -395 | -233 |
| 057 | 139 | -115 | 228 | 020 | -258 | -053 | -111 | 047 | 241 | -135 | -092 | -067 | -053 | -035 | -131 | -332 |
| 228 | 167 | 079 | -075 | -336 | 259 | 087 | -022 | 310 | 109 | -265 | 193 | 280 | 080 | 216 | -071 | 019 |
| 023 | 176 | 077 | 040 | -020 | -065 | -106 | 360 | 237 | 091 | -380 | 397 | 244 | 355 | 092 | -143 | -142 |
| -025 | 538 | 184 | -170 | -298 | 371 | 407 | 338 | -058 | 006 | -131 | 194 | 189 | 077 | 117 | -010 | 136 |
| 056 | 353 | 149 | -048 | -179 | 043 | 124 | 070 | -159 | -072 | 115 | -180 | -094 | -063 | 026 | 169 | 002 |
|  | 075 | 044 | 002 | -220 | -285 | -068 | -016 | 274 | 041 | -188 | 131 | 192 | -172 | 127 | 133 | -018 |
|  |  | 174 | -021 | -301 | 061 | 322 | 209 | -026 | 078 | -141 | 126 | 019 | 123 | -106 | -076 | -045 |
|  |  |  | 168 | 014 | 230 | 070 | 134 | 127 | 041 | -182 | 148 | 147 | 083 | 107 | -044 | -051 |
|  |  |  |  | 512 | -099 | 051 | -037 | 002 | -014 | 017 | -116 | -034 | 193 | 002 | 037 | -261 |
|  |  |  |  |  | -164 | -129 | -088 | 101 | -026 | -013 | -066 | 014 | 206 | 076 | -220 | -073 |
|  |  |  |  |  |  | 488 | 268 | 001 | 046 | -168 | 334 | 194 | 238 | 074 | 128 | 182 |
|  |  |  |  |  |  |  | 131 | -133 | -066 | 058 | 100 | 026 | 076 | -032 | -039 | 061 |
|  |  |  |  |  |  |  |  | 030 | -243 | -346 | 397 | 504 | 410 | 354 | -049 | -000 |
|  |  |  |  |  |  |  |  |  | 089 | -731 | 646 | 745 | 193 | 514 | -060 | -087 |
|  |  |  |  |  |  |  |  |  |  | -563 | 097 | -124 | 115 | -181 | 134 | -185 |
|  |  |  |  |  |  |  |  |  |  |  | -678 | -653 | -399 | -390 | -020 | 178 |
|  |  |  |  |  |  |  |  |  |  |  |  | 583 | 335 | 109 | 016 | -106 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 357 | 847 | -039 | 009 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 212 | -104 | -006 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -060 | 134 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 234 |

3

| 25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 272 | 077 | 239 | -082 | 299 | 318 | -085 | 222 | 180 | 055 | -148 | -048 | -091 | -012 | -093 | 163 | 191 |
| 184 | -222 | -099 | -135 | -018 | -061 | 010 | -138 | 079 | -162 | 097 | 237 | -167 | -014 | 119 | -116 | -034 |
| 208 | -115 | -156 | 151 | -064 | -175 | 272 | -191 | 275 | -116 | -316 | -269 | -011 | 062 | 334 | 073 | 140 |
| 007 | -335 | -003 | 071 | 137 | 278 | 025 | -045 | 067 | -141 | 044 | 069 | -034 | -070 | -009 | -028 | -115 |
| 035 | 241 | -014 | -430 | -073 | 126 | 055 | 118 | -062 | -028 | 527 | 182 | 314 | -111 | 198 | -129 | 070 |
| 040 | 348 | -118 | -291 | -394 | -018 | 238 | 020 | -159 | -121 | 514 | 293 | 178 | -028 | 093 | -089 | -050 |
| 044 | 320 | -071 | -395 | -233 | 056 | 145 | 103 | -134 | -081 | 558 | 235 | 285 | -081 | 165 | -107 | 014 |
| 067 | -053 | -035 | -131 | -332 | -007 | 355 | -063 | 223 | 139 | 130 | 209 | -103 | -082 | -173 | 096 | -035 |
| 280 | 080 | 216 | -071 | 019 | 208 | 153 | -070 | -116 | 021 | 009 | 080 | -079 | -008 | -077 | -203 | -096 |
| 244 | 355 | 092 | -143 | -142 | 235 | 314 | 005 | -071 | -085 | 154 | 205 | -075 | -035 | 191 | -018 | -220 |
| 189 | 077 | 117 | -010 | 136 | 158 | -004 | -062 | 281 | 144 | 038 | -048 | 091 | -299 | -046 | -091 | 502 |
| 094 | -063 | 026 | 169 | 002 | -125 | -108 | -161 | 151 | 030 | -323 | -234 | -057 | 152 | 052 | 088 | -043 |
| 192 | -172 | 127 | 133 | -018 | 065 | 114 | 150 | 058 | -010 | 006 | 174 | -185 | 152 | -203 | 373 | 042 |
| 019 | 123 | -106 | -076 | -045 | -079 | 224 | -219 | 317 | 044 | 018 | 000 | 017 | 133 | 028 | 201 | 390 |
| 147 | 083 | 107 | -044 | -051 | -222 | 220 | 064 | 194 | 205 | -019 | 006 | -025 | -161 | 043 | -228 | 329 |
| 034 | 193 | 002 | 037 | -261 | -162 | 205 | -320 | 073 | -081 | -049 | -051 | 009 | 258 | -033 | -033 | 176 |
| 014 | 206 | 076 | -220 | -073 | 209 | 052 | -230 | 076 | -012 | 049 | -114 | 174 | 114 | 154 | -133 | 060 |
| 194 | 238 | 074 | 128 | 182 | -072 | -084 | -060 | 004 | 140 | -143 | -121 | -007 | -176 | -039 | -394 | 236 |
| 026 | 076 | -032 | -039 | 061 | -222 | 114 | -242 | 443 | 220 | -003 | -046 | 048 | -034 | -091 | 032 | 429 |
| 504 | 410 | 354 | -049 | -000 | 321 | 015 | -128 | -044 | -040 | 131 | 266 | -164 | -120 | -164 | -138 | 167 |
| 745 | 193 | 514 | -060 | -087 | 345 | 375 | -011 | -220 | -065 | 108 | 091 | 005 | -239 | 201 | -057 | -166 |
| 124 | 115 | -181 | 134 | -185 | -149 | 275 | 048 | 012 | 070 | -076 | 041 | -119 | -045 | 093 | -066 | -054 |
| 653 | -399 | -390 | -020 | 178 | -287 | -431 | 050 | 154 | 014 | -087 | -206 | 143 | 235 | -107 | 144 | 052 |
| 583 | 335 | 109 | 016 | -106 | 305 | 369 | -024 | -162 | -214 | 053 | 049 | -002 | -153 | 070 | -173 | 078 |
|  | 357 | 847 | -039 | 009 | 455 | 199 | -003 | -178 | -133 | 094 | 155 | -079 | -386 | 029 | -186 | -121 |
|  |  | 212 | -104 | -006 | 078 | 193 | -151 | -087 | 018 | 044 | 001 | 041 | 048 | 066 | -214 | 149 |
|  |  |  | -060 | 134 | 413 | 034 | 084 | -041 | -015 | 038 | 086 | -057 | -404 | 058 | -136 | -167 |
|  |  |  |  | 234 | -143 | -049 | -104 | -022 | -209 | -473 | -333 | -095 | 053 | -056 | 037 | -020 |
|  |  |  |  |  | 242 | -192 | 061 | 046 | -016 | -193 | -096 | -082 | 069 | -006 | -072 | 150 |
|  |  |  |  |  |  | 008 | -063 | -073 | -226 | 137 | 050 | 079 | -106 | 061 | -152 | -167 |
|  |  |  |  |  |  |  | -102 | 250 | 128 | -115 | -020 | -090 | 041 | -031 | 044 | 092 |
|  |  |  |  |  |  |  |  | -175 | -024 | 356 | 227 | 097 | -391 | -009 | 022 | -045 |
|  |  |  |  |  |  |  |  |  | 333 | -355 | -224 | -099 | 109 | -109 | 282 | 585 |
|  |  |  |  |  |  |  |  |  |  | -049 | 017 | -067 | 120 | -186 | 199 | 307 |
|  |  |  |  |  |  |  |  |  |  |  | 542 | 379 | -371 | 158 | -224 | -054 |
|  |  |  |  |  |  |  |  |  |  |  |  | -572 | -197 | -262 | -207 | -122 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -145 | 444 | 011 | 084 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -065 | 454 | 175 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 034 | -184 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 189 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  | -101 | -011 | 088 | -247 | -340 | -304 | -135 | 060 | -069 | 060 | 160 | 120 | 191 |
| 2 |  |  | 094 | 066 | 258 | 225 | 255 | -046 | -034 | -035 | -013 | 054 | 038 | -172 |
| 3 |  |  |  | 289 | 254 | 287 | 282 | 105 | -041 | 013 | -169 | -191 | 156 | 126 |
| 4 |  |  |  |  | 167 | 251 | 215 | 044 | 074 | 161 | 184 | -122 | 093 | 077 |
| 5 |  |  |  |  |  | 814 | 960 | 158 | -289 | 160 | 006 | -047 | -177 | -205 |
| 6 |  |  |  |  |  |  | 944 | 152 | -441 | 236 | 043 | -273 | -052 | -081 |
| 7 |  |  |  |  |  |  |  | 163 | -377 | 204 | 024 | -158 | -126 | -155 |
| 8 |  |  |  |  |  |  |  |  | 131 | -112 | -332 | -019 | -007 | -030 |
| 9 |  |  |  |  |  |  |  |  |  | -172 | -141 | 191 | 182 | -095 |
| 10 |  |  |  |  |  |  |  |  |  |  | 159 | 103 | 181 | 251 |
| 11 |  |  |  |  |  |  |  |  |  |  |  | -004 | -182 | 217 |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  | -039 | 070 |
| 13 |  |  |  |  |  |  |  |  |  |  |  |  |  | 269 |
| 14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 41 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

RAW SCORE MATRIX--SOPHOMORE GIRLS (N = 43)

| 14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 191 | 344 | 462 | 218 | 150 | 349 | 204 | 222 | 018 | -253 | 261 | 402 | 138 | 330 | 161 | -106 | 198 |
| 172 | -107 | -311 | -091 | 036 | 023 | -019 | 257 | 209 | -318 | 091 | 232 | 191 | 253 | 062 | 298 | 077 |
| 126 | 150 | 102 | 294 | 185 | 104 | -177 | 140 | 129 | -126 | 053 | 001 | 249 | 009 | 063 | 032 | 142 |
| 077 | -030 | -071 | -021 | 290 | -005 | -039 | 146 | 020 | -118 | 128 | 121 | -046 | 084 | -047 | -090 | 042 |
| 205 | -155 | 009 | 185 | -174 | -171 | 018 | 221 | 239 | -330 | 204 | 094 | 188 | 032 | -254 | 401 | 217 |
| 081 | -091 | 017 | 114 | -172 | -232 | -161 | 268 | 211 | -287 | 142 | 036 | 196 | 073 | -133 | 135 | -000 |
| 155 | -132 | 013 | 160 | -182 | -209 | -068 | 254 | 237 | -326 | 183 | 070 | 202 | 053 | -209 | 293 | 123 |
| 030 | 028 | -001 | -095 | -104 | -191 | -083 | -036 | 104 | -001 | 062 | 035 | 113 | -173 | 273 | -111 | 016 |
| 095 | -126 | 114 | -025 | 240 | -035 | 335 | -256 | -262 | 243 | 113 | -019 | -265 | -195 | 189 | 102 | -024 |
| 251 | 104 | 219 | 103 | 044 | -012 | 131 | 130 | 095 | -213 | 207 | 203 | 036 | 197 | -179 | -022 | 117 |
| 217 | 075 | 094 | -106 | 322 | 151 | 309 | 267 | -278 | -161 | 247 | 211 | -012 | 212 | 032 | 063 | -087 |
| 070 | 146 | -047 | -152 | 103 | 317 | 126 | 203 | -147 | -118 | 278 | 240 | -040 | 048 | -137 | 265 | 089 |
| 269 | -075 | 125 | 308 | -159 | 209 | -077 | 055 | -118 | 066 | 082 | 027 | -129 | -099 | -162 | -093 | 014 |
|  | 588 | 255 | 326 | 189 | 512 | -148 | 294 | -190 | -073 | 242 | 203 | -140 | 225 | -059 | -363 | -074 |
|  |  | 362 | 312 | 282 | 393 | -017 | 393 | -096 | -255 | 370 | 385 | 145 | 344 | 095 | -305 | -081 |
|  |  |  | 509 | -003 | 057 | -022 | 227 | -106 | -107 | 378 | 296 | 034 | 116 | -037 | -003 | 092 |
|  |  |  |  | -164 | 030 | -254 | 147 | 088 | -070 | 191 | -008 | 089 | 016 | -195 | -073 | 057 |
|  |  |  |  |  | 314 | 072 | 148 | 036 | -167 | 173 | 139 | 174 | 083 | 137 | -159 | -130 |
|  |  |  |  |  |  | -019 | 244 | -147 | -109 | 183 | 187 | 028 | 092 | -184 | -041 | 015 |
|  |  |  |  |  |  |  | -025 | -296 | -163 | 277 | 372 | 077 | 357 | 249 | 288 | 094 |
|  |  |  |  |  |  |  |  | 035 | -813 | 791 | 804 | 405 | 615 | -173 | 182 | 291 |
|  |  |  |  |  |  |  |  |  | -500 | -090 | -088 | 591 | -060 | 103 | 060 | 313 |
|  |  |  |  |  |  |  |  |  |  | -680 | -729 | -688 | -586 | -000 | -283 | -459 |
|  |  |  |  |  |  |  |  |  |  |  | 762 | 255 | 407 | -041 | 225 | 369 |
|  |  |  |  |  |  |  |  |  |  |  |  | 345 | 805 | -013 | 281 | 372 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 332 | 143 | 134 | 191 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 002 | 201 | 267 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -291 | -076 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 284 |

3

| 26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 138 | 330 | 161 | -106 | 198 | 285 | -031 | 446 | 268 | 017 | 169 | -182 | -248 | -016 | 122 | 348 |
| 191 | 253 | 062 | 298 | 077 | -136 | -220 | -063 | -027 | 299 | 062 | 185 | 010 | -181 | -148 | 055 |
| 249 | 009 | 063 | 032 | 142 | 055 | 070 | 250 | 138 | 012 | -036 | 047 | 085 | -056 | 150 | 244 |
| -046 | 084 | -047 | -090 | 042 | 142 | 163 | 341 | -022 | 223 | 313 | -161 | 211 | -036 | 266 | 140 |
| 188 | 032 | -254 | 401 | 217 | 378 | 165 | -162 | -141 | 586 | 198 | 263 | -150 | 109 | 036 | -134 |
| 196 | 073 | -133 | 135 | -000 | 180 | 096 | -187 | -074 | 458 | 148 | 212 | 093 | 183 | 034 | 038 |
| 202 | 053 | -209 | 293 | 123 | 301 | 140 | -183 | -116 | 554 | 184 | 252 | -041 | 150 | 036 | -058 |
| 113 | -173 | 273 | -111 | 016 | 036 | 203 | -109 | 143 | 159 | 295 | -213 | -040 | -117 | 157 | 123 |
| -265 | -195 | 189 | 102 | -024 | -152 | -214 | 064 | -221 | 113 | 220 | -157 | 114 | -233 | 120 | -020 |
| 036 | 197 | -179 | -022 | 117 | 105 | -271 | -072 | 170 | 057 | 076 | -041 | 039 | 040 | -049 | 044 |
| -012 | 212 | 032 | 063 | -087 | 153 | -323 | 094 | -179 | -170 | -221 | 118 | -023 | 295 | -110 | -079 |
| -040 | 048 | -137 | 265 | 089 | 074 | -256 | 065 | 099 | 044 | 078 | -053 | -271 | 129 | -175 | -037 |
| -129 | -099 | -162 | -093 | 014 | -207 | -238 | 442 | 348 | -073 | 101 | -177 | 205 | 029 | 095 | 432 |
| 140 | 225 | -059 | -363 | -074 | -071 | -111 | 436 | 434 | -287 | -038 | -201 | -019 | 201 | 064 | 496 |
| 145 | 344 | 095 | -305 | -081 | -006 | 037 | 196 | 354 | -368 | -126 | -166 | -211 | 201 | -081 | 472 |
| 034 | 116 | -037 | -003 | 092 | 137 | -048 | 133 | 223 | -070 | -063 | 012 | -211 | 204 | 072 | 292 |
| 089 | 016 | -195 | -073 | 057 | 126 | 104 | 100 | 358 | -063 | -028 | -022 | -013 | 047 | -010 | 305 |
| 174 | 083 | 137 | -159 | -130 | -031 | 054 | 245 | -250 | -023 | -059 | 046 | -188 | -108 | -038 | 228 |
| 028 | 092 | -184 | -041 | 015 | -014 | -115 | 573 | 204 | -108 | -029 | -063 | -054 | -043 | -219 | 246 |
| 077 | 357 | 249 | 288 | 094 | 275 | -349 | 004 | -098 | 093 | 080 | -009 | -104 | -200 | 065 | -154 |
| 405 | 615 | -173 | 182 | 291 | 161 | -037 | 218 | 223 | -042 | -126 | 116 | -352 | 353 | 001 | 548 |
| 591 | -060 | 103 | 060 | 313 | -038 | 146 | -032 | -048 | 225 | 085 | 082 | -146 | -204 | 209 | 126 |
| -688 | -586 | -000 | -283 | -459 | -205 | 055 | -153 | -104 | -139 | 011 | -130 | 399 | -095 | -148 | -451 |
| 255 | 407 | -041 | 225 | 369 | 206 | -122 | 090 | 134 | 098 | 058 | 020 | -345 | 279 | 161 | 445 |
| 345 | 805 | -013 | 281 | 372 | 238 | -191 | 186 | 160 | -025 | -040 | 033 | -396 | 098 | 031 | 410 |
|  | 332 | 143 | 134 | 191 | 118 | -038 | 075 | 157 | 041 | -202 | 264 | -253 | -178 | 000 | 244 |
|  |  | 002 | 201 | 267 | 189 | -200 | 103 | 187 | -155 | -125 | 021 | -306 | -030 | -079 | 255 |
|  |  |  | -291 | -076 | -248 | -215 | -146 | -255 | -068 | 052 | -119 | 068 | -106 | 229 | 029 |
|  |  |  |  | 284 | 312 | -101 | -120 | -227 | 319 | 088 | 175 | -345 | -164 | 005 | -173 |
|  |  |  |  |  | 014 | 107 | -057 | 039 | 115 | 079 | 002 | -427 | 031 | 219 | -030 |
|  |  |  |  |  |  | 134 | 074 | -044 | 419 | 110 | 234 | -185 | -102 | 004 | 018 |
|  |  |  |  |  |  |  | -037 | 006 | 201 | 049 | 115 | -331 | -023 | 276 | 110 |
|  |  |  |  |  |  |  |  | 330 | -091 | 057 | -146 | 047 | 018 | 177 | 492 |
|  |  |  |  |  |  |  |  |  | -295 | -067 | -173 | -035 | -004 | -032 | 317 |
|  |  |  |  |  |  |  |  |  |  | 546 | 216 | -110 | -105 | 237 | -043 |
|  |  |  |  |  |  |  |  |  |  |  | -700 | 095 | -022 | 289 | 073 |
|  |  |  |  |  |  |  |  |  |  |  |  | -207 | -060 | -133 | -121 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -192 | -213 | -183 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 121 | 106 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 362 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | -327 | -268 | 004 | -297 | -453 | -395 | -398 | 036 | -049 | -141 | 348 | -472 | -146 |
| 2 | | | 415 | 305 | 363 | 463 | 437 | 277 | -002 | 209 | 069 | -104 | 308 | -020 |
| 3 | | | | 230 | 218 | 101 | 173 | 196 | -158 | 204 | -053 | 173 | 119 | 105 |
| 4 | | | | | 136 | 134 | 144 | 006 | -006 | 436 | 163 | -131 | -028 | 280 |
| 5 | | | | | | 765 | 945 | 401 | 177 | 178 | 201 | -171 | 187 | -095 |
| 6 | | | | | | | 934 | 576 | 200 | 245 | 297 | -304 | 462 | 014 |
| 7 | | | | | | | | 516 | 200 | 224 | 263 | -249 | 339 | -046 |
| 8 | | | | | | | | | 176 | 202 | 263 | -291 | 288 | 032 |
| 9 | | | | | | | | | | 056 | 288 | -027 | -137 | -461 |
| 10 | | | | | | | | | | | 285 | -091 | 120 | 159 |
| 11 | | | | | | | | | | | | -303 | 046 | -024 |
| 12 | | | | | | | | | | | | | -236 | -061 |
| 13 | | | | | | | | | | | | | | 101 |
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| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |

RAW SCORE MATRIX--JUNIOR BOYS (N = 45)

| (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -146 | -101 | -087 | -242 | -020 | -249 | 057 | 055 | -064 | -033 | 090 | 052 | -032 | 013 | 161 | 291 | 203 |
| -020 | 022 | -097 | 077 | -030 | -182 | -158 | 052 | -090 | 097 | 056 | 033 | -005 | 043 | 046 | -329 | -050 |
| 105 | -116 | 105 | 216 | 135 | 045 | -169 | 102 | -287 | 258 | 022 | -027 | -184 | -004 | -059 | -203 | 058 |
| 280 | 176 | -205 | 032 | -112 | 147 | 011 | 332 | -364 | -004 | 339 | 238 | -275 | 066 | -182 | -263 | 193 |
| -095 | -007 | -119 | 049 | -021 | -107 | -062 | 148 | -137 | 010 | 121 | 112 | 109 | 067 | -042 | -187 | 194 |
| 014 | 087 | -120 | 058 | -047 | 043 | -007 | 086 | -136 | 033 | 162 | 072 | 065 | -014 | -044 | -187 | 082 |
| -046 | 041 | -127 | 057 | -036 | -038 | -038 | 126 | -145 | 022 | 150 | 099 | 093 | 030 | -046 | -199 | 150 |
| 032 | -110 | -120 | -024 | -003 | 258 | 050 | 022 | 060 | -080 | 048 | -001 | 293 | -076 | 177 | -021 | -146 |
| -461 | -307 | -161 | -064 | 060 | -093 | 264 | 267 | -120 | -350 | 192 | 574 | 032 | 515 | 562 | 276 | 225 |
| 159 | -001 | -043 | -233 | -209 | -009 | -205 | 003 | -190 | 281 | -013 | -195 | -145 | -205 | -219 | -132 | 053 |
| -024 | -149 | -417 | -354 | 070 | 218 | 076 | -053 | -174 | 180 | 050 | -054 | -130 | -111 | -069 | -023 | 004 |
| -061 | 011 | 162 | 138 | 083 | -286 | 052 | -054 | -037 | 049 | -054 | 001 | -115 | 043 | 120 | 166 | 178 |
| 101 | 170 | -034 | -059 | -241 | 114 | -089 | -170 | -012 | 246 | -147 | -239 | -065 | -162 | -244 | -305 | -193 |
|  | 426 | 148 | 151 | -065 | 301 | -059 | -098 | -104 | 249 | -104 | -309 | 045 | -305 | -377 | -230 | -003 |
|  |  | 256 | 322 | 143 | 266 | 212 | -136 | -306 | 289 | 050 | -044 | -054 | -084 | -451 | -295 | 017 |
|  |  |  | 652 | 142 | 052 | -066 | 209 | -055 | -100 | 041 | 135 | 125 | 147 | 028 | 081 | -048 |
|  |  |  |  | 189 | 048 | -023 | 299 | -211 | -095 | 210 | 342 | -080 | 234 | -122 | -175 | 140 |
|  |  |  |  |  | 363 | 160 | 074 | -245 | 073 | 147 | 211 | -121 | 138 | 000 | 196 | -102 |
|  |  |  |  |  |  | 317 | -134 | -248 | 205 | 056 | -086 | -044 | -166 | -068 | -074 | -267 |
|  |  |  |  |  |  |  | -390 | -218 | -004 | 040 | 301 | 023 | 272 | 133 | 276 | 088 |
|  |  |  |  |  |  |  |  | -241 | -530 | 645 | 678 | -075 | 358 | 334 | 010 | 223 |
|  |  |  |  |  |  |  |  |  | -531 | -425 | -309 | 622 | -091 | 188 | 265 | -189 |
|  |  |  |  |  |  |  |  |  |  | -266 | -580 | -491 | -460 | -596 | -392 | -124 |
|  |  |  |  |  |  |  |  |  |  |  | 518 | -255 | -085 | 149 | 104 | 411 |
|  |  |  |  |  |  |  |  |  |  |  |  | -060 | 799 | 487 | 206 | 262 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 076 | 336 | 151 | -166 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 438 | 130 | 031 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 341 | 046 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 120 |

| (25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 052 | -032 | 013 | 161 | 291 | 203 | 152 | 080 | -074 | -028 | -276 | -155 | -023 | -227 | 446 | -019 | -204 |
| 033 | -005 | 043 | 046 | -329 | -050 | 146 | 003 | -237 | 115 | 164 | 249 | -181 | -093 | -269 | 008 | 030 |
| -027 | -184 | -004 | -059 | -203 | 058 | 116 | 129 | 035 | 079 | -046 | 060 | -102 | -130 | -043 | 262 | 203 |
| 238 | -275 | 066 | -182 | -263 | 193 | 256 | 006 | -068 | 164 | 203 | 185 | -092 | -051 | 028 | 175 | 224 |
| 112 | 109 | 067 | -042 | -187 | 194 | -005 | 001 | -247 | -178 | 373 | 589 | -503 | -055 | -145 | -063 | -015 |
| 072 | 065 | -014 | -044 | -187 | 082 | -002 | -109 | -179 | -015 | 364 | 424 | -270 | 130 | -189 | -071 | -047 |
| 099 | 093 | 030 | -046 | -199 | 150 | -004 | -055 | -228 | -107 | 393 | 543 | -417 | 036 | -176 | -071 | -032 |
| -001 | 293 | -076 | 177 | -021 | -146 | 008 | -315 | -232 | -097 | 250 | 321 | -214 | 270 | -037 | -208 | -108 |
| 574 | 032 | 515 | 562 | 276 | 225 | -061 | -100 | -299 | -434 | 064 | 166 | -175 | -025 | 038 | -286 | -352 |
| -195 | -145 | -205 | -219 | -132 | 053 | 097 | 010 | -247 | -025 | 286 | 205 | -012 | 197 | -129 | 058 | -063 |
| -054 | -130 | -111 | -069 | -023 | 004 | -051 | -291 | -213 | -396 | 076 | 029 | 030 | 225 | 075 | -272 | -296 |
| 001 | -115 | 043 | 120 | 166 | 178 | 129 | 107 | 012 | 092 | -181 | -212 | 128 | -145 | 226 | -129 | -211 |
| -239 | -065 | -162 | -244 | -305 | -193 | 115 | 016 | -010 | 054 | 209 | 144 | -015 | 123 | -325 | 168 | 188 |
| -309 | 045 | -305 | -377 | -230 | -003 | 053 | 089 | 259 | 307 | 052 | -057 | 109 | 152 | -009 | 132 | 474 |
| -044 | -054 | -084 | -451 | -295 | 017 | 240 | 028 | 402 | 397 | -055 | -165 | 172 | 085 | -202 | 128 | 565 |
| 135 | 125 | 147 | 028 | 081 | -048 | 166 | 064 | 167 | 241 | 024 | -039 | 092 | -060 | 034 | 111 | 350 |
| 342 | -080 | 234 | -122 | -175 | 140 | 109 | 158 | 203 | 255 | -055 | 065 | -132 | -195 | -012 | -001 | 393 |
| 211 | -121 | 138 | 000 | 196 | -102 | 043 | -093 | 222 | -114 | -317 | -200 | 004 | 046 | 104 | -310 | 112 |
| -086 | -044 | -166 | -068 | -074 | -267 | 145 | -392 | 431 | 261 | -069 | -060 | 024 | 435 | -036 | 134 | 445 |
| 301 | 023 | 272 | 133 | 276 | 088 | 188 | -252 | 122 | 012 | 034 | -016 | 041 | 083 | 166 | 116 | -064 |
| 678 | -075 | 358 | 334 | 010 | 223 | 056 | 044 | -205 | -119 | 089 | 125 | -104 | -253 | 204 | -215 | -007 |
| -309 | 622 | -091 | 188 | 265 | -189 | -162 | 004 | -139 | 112 | 099 | 056 | 004 | -067 | -255 | -063 | -152 |
| -580 | -491 | -460 | -596 | -392 | -124 | 007 | 067 | 257 | 004 | -181 | -162 | 084 | 281 | -059 | 175 | 205 |
| 518 | -255 | -085 | 149 | 104 | 411 | 122 | -114 | -240 | -165 | -013 | 029 | -063 | -288 | 334 | -191 | -014 |
|  | -060 | 799 | 487 | 206 | 262 | 090 | -020 | -177 | -156 | 107 | 129 | -098 | -273 | 226 | -159 | -171 |
|  |  | 076 | 336 | 151 | -166 | -030 | -048 | -021 | 186 | 289 | 184 | -022 | -023 | -140 | -083 | 023 |
|  |  |  | 438 | 130 | 031 | 024 | 111 | -046 | -039 | 120 | 129 | -079 | -157 | 034 | -027 | -172 |
|  |  |  |  | 341 | 046 | -142 | -128 | -266 | -151 | 069 | 068 | -023 | -100 | 072 | -150 | -385 |
|  |  |  |  |  | 120 | 064 | -182 | -163 | -177 | -031 | -232 | 304 | -039 | 310 | -120 | -369 |
|  |  |  |  |  |  | -118 | 393 | -369 | -306 | 067 | 048 | -029 | -425 | 181 | -052 | -032 |
|  |  |  |  |  |  |  | -187 | 193 | 354 | 055 | 078 | -058 | 080 | 279 | 139 | 317 |
|  |  |  |  |  |  |  |  | -133 | 019 | 091 | -005 | 079 | -543 | -096 | 037 | 195 |
|  |  |  |  |  |  |  |  |  | 547 | -461 | -399 | 129 | 233 | 035 | 252 | 491 |
|  |  |  |  |  |  |  |  |  |  | 069 | -012 | 072 | 143 | -085 | 407 | 502 |
|  |  |  |  |  |  |  |  |  |  |  | 693 | -098 | 124 | -253 | 166 | -029 |
|  |  |  |  |  |  |  |  |  |  |  |  | -782 | 030 | -248 | 143 | -016 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 084 | 087 | -052 | -018 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -184 | 019 | -032 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -113 | -159 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 296 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | -269 | -138 | 092 | -144 | -300 | -231 | -053 | 219 | -324 | -041 | 322 | 055 | 029 |
| 2 | | | 431 | 330 | 034 | 174 | 109 | 454 | -160 | 116 | 057 | 083 | 078 | -071 |
| 3 | | | | 344 | 137 | 328 | 242 | 132 | -194 | -114 | -004 | 219 | 047 | 197 |
| 4 | | | | | 105 | 103 | 108 | 334 | 185 | 046 | 255 | 174 | 210 | 302 |
| 5 | | | | | | 860 | 964 | 096 | -081 | -051 | 141 | -344 | 128 | -141 |
| 6 | | | | | | | 965 | 083 | -193 | -026 | 169 | -359 | 159 | -147 |
| 7 | | | | | | | | 093 | -143 | -040 | 161 | -364 | 149 | -149 |
| 8 | | | | | | | | | 246 | -107 | 197 | 283 | 182 | 093 |
| 9 | | | | | | | | | | -182 | 279 | 481 | 291 | 181 |
| 10 | | | | | | | | | | | -241 | -174 | 105 | -152 |
| 11 | | | | | | | | | | | | -132 | 173 | 317 |
| 12 | | | | | | | | | | | | | 176 | 187 |
| 13 | | | | | | | | | | | | | | 192 |
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| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |

# RAW SCORE MATRIX--JUNIOR GIRLS (N = 43)

| 14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 029 | -042 | -024 | 062 | -115 | 261 | -043 | 024 | 029 | -000 | 269 | -055 | 222 | -229 | -088 | 085 | 085 |
| 071 | 096 | -024 | 166 | 058 | 293 | 001 | -102 | 122 | -040 | 169 | 000 | 048 | -133 | 201 | -086 | -424 |
| 97 | 062 | -157 | -083 | 437 | 229 | 284 | -031 | 272 | -419 | 192 | 211 | 348 | 131 | 204 | 216 | -015 |
| 02 | 132 | -070 | -178 | 386 | 331 | 370 | -024 | -240 | 004 | 073 | 181 | -028 | 155 | 139 | 068 | 093 |
| 41 | -345 | -131 | -251 | 191 | 133 | 341 | 327 | -113 | -354 | 063 | 591 | -049 | 612 | -089 | 266 | 111 |
| 47 | -325 | -084 | -204 | 218 | 172 | 336 | 270 | 010 | -428 | 055 | 562 | -045 | 590 | 133 | 343 | 068 |
| 49 | -347 | -111 | -235 | 212 | 158 | 351 | 309 | -052 | -406 | 061 | 598 | -049 | 623 | 024 | 316 | 093 |
| 93 | 176 | 094 | 104 | 052 | 128 | 028 | -016 | 058 | -040 | 167 | -065 | 034 | -202 | 009 | 125 | -210 |
| 81 | -045 | 086 | -145 | 099 | 215 | 365 | 090 | -264 | -109 | 170 | 229 | -043 | 103 | -176 | 160 | 318 |
| 52 | 065 | -115 | -072 | 010 | -339 | -169 | -226 | 006 | 283 | -340 | -217 | -166 | -037 | -080 | -318 | -207 |
| 17 | 131 | 308 | 073 | -005 | 302 | 110 | 278 | -192 | -124 | 279 | 222 | -007 | 080 | 001 | -099 | -036 |
| 37 | 105 | -259 | -042 | 065 | 122 | 263 | -214 | 191 | -207 | 263 | -015 | 229 | -221 | 085 | 230 | 007 |
| 92 | 168 | 066 | 137 | 235 | 309 | 317 | -168 | 116 | -167 | 119 | 155 | 067 | 049 | -105 | 134 | -136 |
|  | 277 | -138 | -099 | 184 | 266 | 147 | 045 | -047 | -078 | 061 | 025 | 121 | 003 | -155 | -141 | -050 |
|  |  | 357 | 495 | -012 | -011 | -236 | 010 | 138 | 036 | 231 | -270 | 077 | -450 | -072 | -214 | -259 |
|  |  |  | 492 | -168 | 079 | -151 | 057 | -118 | 155 | 017 | -162 | -081 | -155 | -063 | -045 | -030 |
|  |  |  |  | -323 | 121 | -325 | -097 | 166 | 129 | 245 | -271 | 059 | -451 | -120 | -211 | -178 |
|  |  |  |  |  | 237 | 578 | 221 | -265 | -317 | 293 | 517 | 026 | 396 | 043 | 074 | 250 |
|  |  |  |  |  |  | 237 | 071 | -131 | -106 | 394 | 235 | 007 | -009 | 063 | -117 | 094 |
|  |  |  |  |  |  |  | -075 | -207 | -439 | 285 | 696 | 103 | 555 | 383 | 358 | 388 |
|  |  |  |  |  |  |  |  | -407 | -344 | 365 | 521 | -091 | 417 | -105 | 003 | 028 |
|  |  |  |  |  |  |  |  |  | -459 | -118 | -393 | 696 | -392 | 116 | 045 | -326 |
|  |  |  |  |  |  |  |  |  |  | -384 | -510 | -642 | -323 | -279 | -272 | -011 |
|  |  |  |  |  |  |  |  |  |  |  | 450 | 247 | -111 | 251 | -000 | 052 |
|  |  |  |  |  |  |  |  |  |  |  |  | -020 | 826 | 187 | 293 | 263 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -178 | 230 | 073 | -060 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 056 | 328 | 261 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 268 | 050 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 145 |

3

| 5) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 | 222 | -229 | -038 | 085 | 085 | -086 | -031 | 050 | -043 | -114 | -387 | 301 | 070 | -112 | -117 | 071 |
| 00 | 048 | -133 | 201 | -086 | -424 | 293 | -152 | 160 | 061 | 142 | 159 | -034 | -057 | 002 | -072 | 260 |
| 11 | 348 | 131 | 204 | 216 | -015 | 221 | 085 | 496 | 174 | 139 | 005 | 093 | -290 | -130 | -052 | 248 |
| 81 | -028 | 155 | 139 | 068 | 093 | 226 | -135 | 421 | 336 | 129 | 315 | -225 | -182 | -234 | 124 | 175 |
| 91 | -049 | 612 | -089 | 266 | 111 | 127 | 070 | 098 | 218 | 644 | 295 | 216 | -094 | 104 | -225 | 047 |
| 62 | -045 | 590 | 133 | 343 | 068 | 078 | 053 | 138 | 142 | 507 | 169 | 237 | -124 | 087 | -294 | 092 |
| 98 | -049 | 623 | 024 | 316 | 093 | 106 | 063 | 149 | 186 | 596 | 240 | 235 | -113 | 099 | -269 | 072 |
| 65 | 034 | -202 | 009 | 125 | -210 | 181 | -105 | 045 | 176 | 264 | 402 | -203 | -005 | -091 | -044 | 363 |
| 29 | -043 | 103 | -176 | 160 | 318 | 199 | -084 | 377 | 314 | -117 | 061 | -151 | -167 | 137 | 020 | 410 |
| 17 | -166 | -037 | -080 | -318 | -207 | -194 | -276 | -226 | 209 | 019 | 132 | -113 | 271 | 280 | -025 | -129 |
| 22 | -007 | 080 | 001 | -099 | -036 | 340 | -064 | 392 | 197 | 064 | 213 | -159 | -323 | -102 | 039 | 264 |
| 15 | 229 | -221 | 085 | 230 | 007 | 143 | 201 | 246 | 083 | -212 | -073 | -105 | -057 | -117 | 009 | 315 |
| 55 | 067 | 049 | -105 | 134 | -136 | 128 | -353 | 391 | 347 | 093 | 064 | -003 | 109 | 117 | -205 | 551 |
| 25 | 121 | 003 | -155 | -141 | -050 | 286 | 132 | 526 | 376 | -013 | 177 | -209 | -130 | -305 | 344 | 326 |
| 70 | 077 | -450 | -072 | -214 | -259 | 035 | -037 | 161 | 325 | 029 | 281 | -271 | -133 | -177 | 109 | 302 |
| 62 | -081 | -155 | -063 | -045 | -030 | -094 | -169 | -021 | 008 | 001 | 157 | -146 | -014 | -084 | -009 | 056 |
| 71 | 059 | -451 | -120 | -211 | -178 | 081 | -338 | 044 | 020 | 178 | -048 | 215 | 014 | -028 | 058 | 186 |
| 17 | 026 | 396 | 043 | 074 | 250 | 088 | -038 | 221 | 258 | 067 | 082 | -047 | -293 | -053 | -089 | -025 |
| 35 | 007 | -009 | 063 | -117 | 094 | 495 | -222 | 599 | 273 | 063 | -131 | 191 | -103 | -253 | -173 | 326 |
| 96 | 103 | 555 | 383 | 358 | 388 | 187 | 118 | 383 | 192 | 129 | 182 | -100 | -368 | 086 | 119 | 148 |
| 21 | -091 | 417 | -105 | 003 | 028 | 008 | 066 | -013 | 076 | 136 | -024 | 143 | -344 | 093 | -061 | 057 |
| 93 | 696 | -392 | 116 | 045 | -326 | -215 | 238 | 104 | -060 | 038 | 027 | -010 | 234 | -082 | -192 | 283 |
| 10 | -642 | -323 | -279 | -272 | -011 | 072 | -316 | -366 | -147 | -189 | -110 | -029 | 323 | -061 | 144 | -394 |
| 50 | 247 | -111 | 251 | -000 | 052 | 369 | -024 | 238 | 111 | 064 | -043 | 102 | -575 | 069 | -244 | 217 |
|  | -020 | 826 | 187 | 293 | 263 | 183 | 124 | 251 | 101 | 304 | 085 | 151 | -462 | 107 | -098 | 061 |
|  |  | -178 | 230 | 073 | -060 | -099 | 176 | 343 | 103 | 035 | 103 | -099 | 057 | 024 | -125 | 309 |
|  |  |  | 056 | 328 | 261 | -041 | 167 | 116 | 034 | 281 | 116 | 096 | -189 | 046 | 056 | -101 |
|  |  |  |  | 268 | 050 | 024 | 274 | 043 | -186 | -134 | -023 | -097 | -250 | 004 | 170 | 050 |
|  |  |  |  |  | 145 | -135 | 262 | 096 | -124 | 034 | -080 | 097 | -025 | 117 | -170 | 026 |
|  |  |  |  |  |  | -014 | -032 | 155 | -013 | -142 | -005 | -116 | -144 | 128 | 081 | -191 |
|  |  |  |  |  |  |  | -106 | 413 | 367 | 213 | 000 | 171 | -294 | -017 | 070 | 346 |
|  |  |  |  |  |  |  |  | -156 | -271 | 111 | 122 | -056 | -219 | -334 | 092 | -168 |
|  |  |  |  |  |  |  |  |  | 567 | 041 | 070 | -046 | -195 | -132 | -004 | 586 |
|  |  |  |  |  |  |  |  |  |  | 319 | 296 | -038 | -089 | 026 | 153 | 584 |
|  |  |  |  |  |  |  |  |  |  |  | 449 | 358 | -047 | -104 | 091 | 175 |
|  |  |  |  |  |  |  |  |  |  |  |  | -671 | -088 | -160 | 144 | 144 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 040 | 087 | -080 | -016 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 032 | -051 | -070 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -143 | 109 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 181 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | -115 | 054 | -061 | -415 | -464 | -449 | -604 | -421 | -083 | -002 | 306 | 259 | 057 |
| 2 | | | 029 | -117 | -025 | -069 | -047 | -067 | -138 | -217 | -249 | -195 | -092 | -066 |
| 3 | | | | 282 | 072 | 062 | 069 | -192 | 251 | -052 | 217 | 387 | 040 | 142 |
| 4 | | | | | -136 | 034 | -057 | 037 | 089 | 091 | -049 | 299 | -016 | 236 |
| 5 | | | | | | 907 | 979 | 347 | 046 | 094 | 080 | -399 | -035 | 269 |
| 6 | | | | | | | 974 | 375 | 053 | 120 | -037 | -389 | -124 | 254 |
| 7 | | | | | | | | 368 | 050 | 109 | 025 | -404 | -079 | 268 |
| 8 | | | | | | | | | 263 | 013 | -081 | -372 | -205 | -042 |
| 9 | | | | | | | | | | -011 | -032 | -001 | 093 | -090 |
| 10 | | | | | | | | | | | 527 | 172 | 160 | 409 |
| 11 | | | | | | | | | | | | -057 | 126 | 429 |
| 12 | | | | | | | | | | | | | 167 | 056 |
| 13 | | | | | | | | | | | | | | -023 |
| 14 | | | | | | | | | | | | | | |
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| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |

2

RAW SCORE MATRIX--SENIOR BOYS (N = 21)

| 4) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 57 | -052 | -089 | 204 | -067 | 110 | -310 | -051 | 128 | 111 | -088 | -188 | -194 | -180 | 201 | 243 | 258 |
| 66 | -071 | -019 | -097 | 028 | 006 | -014 | 051 | 148 | -114 | -218 | 143 | 105 | 301 | 131 | -168 | -218 |
| 42 | 445 | -067 | -116 | 257 | 190 | 240 | -054 | 428 | -352 | -019 | 184 | 512 | 241 | -187 | -441 | -070 |
| 36 | 194 | -184 | -336 | -176 | -157 | 383 | -026 | 016 | -207 | -072 | 191 | 517 | 285 | 088 | -140 | -136 |
| 59 | 265 | 060 | 115 | 238 | -084 | 270 | 369 | -204 | -366 | 470 | 409 | 254 | 268 | -640 | 143 | -140 |
| 54 | 097 | -028 | 027 | 249 | -293 | 391 | 301 | -062 | -461 | 362 | 422 | 395 | 348 | -580 | 144 | -125 |
| 58 | 190 | 019 | 075 | 249 | -187 | 335 | 345 | -141 | -421 | 429 | 425 | 328 | 313 | -627 | 147 | -136 |
| 42 | 301 | 089 | -128 | -004 | -194 | 345 | 275 | -408 | -156 | 184 | 273 | 070 | 251 | -021 | 196 | 143 |
| 90 | 261 | 095 | -373 | -148 | -104 | 488 | -157 | -305 | 089 | -129 | 135 | -102 | 266 | 067 | -366 | 328 |
| 09 | -086 | 082 | 280 | -305 | 014 | -217 | -271 | -115 | 438 | -050 | -441 | -026 | -553 | 018 | -333 | 049 |
| 29 | 345 | 224 | 139 | -004 | 677 | -159 | -164 | -226 | 395 | 112 | -277 | 049 | -424 | -113 | -284 | 299 |
| 66 | -068 | -529 | -165 | -073 | -235 | -320 | -183 | 378 | 086 | -151 | -260 | -060 | -283 | 177 | -334 | -168 |
| 23 | -243 | -214 | -064 | -564 | -225 | -369 | -010 | -150 | 332 | -263 | -331 | -177 | -286 | -081 | 010 | 115 |
|  | 365 | -265 | -204 | 369 | 267 | 086 | -118 | -166 | 154 | 072 | -073 | 213 | -111 | -370 | -402 | -001 |
|  |  | 205 | -140 | 306 | 429 | 465 | 223 | -263 | -287 | 468 | 458 | 275 | 340 | -158 | -135 | 309 |
|  |  |  | 672 | 050 | 449 | 252 | 038 | -279 | 052 | 106 | 110 | -065 | 093 | -111 | 257 | 188 |
|  |  |  |  | 058 | 245 | -243 | 063 | 074 | 078 | 064 | -194 | -052 | -302 | -294 | 329 | -170 |
|  |  |  |  |  | 307 | 256 | 058 | 151 | -286 | 180 | 265 | 186 | 248 | -482 | -054 | -178 |
|  |  |  |  |  |  | -053 | -189 | -141 | 308 | 004 | -194 | 022 | -242 | -075 | -221 | 071 |
|  |  |  |  |  |  |  | -058 | -218 | -374 | 086 | 548 | 403 | 686 | -219 | -049 | 330 |
|  |  |  |  |  |  |  |  | -239 | -662 | 757 | 733 | 235 | 508 | -158 | 668 | -061 |
|  |  |  |  |  |  |  |  |  | -321 | -177 | -173 | 361 | -140 | -025 | -340 | -490 |
|  |  |  |  |  |  |  |  |  |  | -611 | -840 | -634 | -736 | 239 | -340 | 177 |
|  |  |  |  |  |  |  |  |  |  |  | 702 | 234 | 339 | -221 | 421 | 066 |
|  |  |  |  |  |  |  |  |  |  |  |  | 405 | 906 | -191 | 424 | 109 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 378 | -363 | -128 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -124 | 308 | 131 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -011 | 246 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 170 |

| 5) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39` | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 88 | -194 | -180 | 201 | 243 | 258 | -434 | -455 | -179 | -033 | -078 | -226 | 319 | -383 | 302 | 282 | -225 |
| 43 | 105 | 301 | 131 | -168 | -218 | -069 | 310 | 277 | 028 | -148 | -040 | -051 | 132 | 153 | 173 | 200 |
| 84 | 512 | 241 | -187 | -441 | -070 | -001 | -110 | 071 | -090 | 241 | 398 | -072 | 074 | 196 | 201 | 002 |
| 91 | 517 | 285 | 088 | -140 | -136 | -133 | -150 | -228 | -176 | 104 | 308 | -244 | -083 | 232 | -009 | 094 |
| 09 | 254 | 268 | -640 | 143 | -140 | 699 | 193 | 062 | 132 | 315 | 136 | -101 | 024 | -470 | -653 | 180 |
| 22 | 395 | 348 | -580 | 144 | -125 | 641 | 107 | -075 | 106 | 377 | 150 | -081 | 050 | -329 | -734 | 053 |
| 2[illegible] | 328 | 313 | -627 | 147 | -136 | 688 | 156 | -003 | 122 | 352 | 146 | -093 | 037 | -413 | -708 | 123 |
| 73 | 070 | 251 | -021 | 196 | 143 | 309 | 353 | 078 | 161 | -071 | 025 | -295 | -090 | -533 | -341 | -090 |
| 35 | -102 | 266 | 067 | -366 | 328 | 122 | -037 | -071 | -053 | 033 | 355 | -547 | 484 | -038 | -313 | -161 |
| 41 | -026 | -553 | 018 | -333 | 049 | -206 | 124 | 237 | 381 | -268 | -132 | -251 | -095 | -373 | -136 | 184 |
| 77 | 049 | -424 | -113 | -284 | 299 | -268 | 200 | 363 | 223 | -201 | -320 | 142 | -140 | -149 | 022 | 189 |
| 60 | -060 | -283 | 177 | -334 | -168 | -252 | -099 | -049 | -052 | -099 | 140 | -032 | 123 | 036 | 511 | -017 |
| 31 | -177 | -286 | -081 | 010 | 115 | -194 | -488 | -170 | -030 | 086 | 149 | -099 | 163 | -061 | -058 | -030 |
| 73 | 213 | -111 | -370 | -402 | -001 | 081 | 075 | 221 | 629 | 116 | -024 | -005 | -198 | -090 | -354 | 339 |
| 58 | 275 | 340 | -158 | -135 | 309 | 090 | 314 | 186 | 026 | 138 | 211 | -113 | -333 | -107 | -065 | 062 |
| 10 | -065 | 093 | -111 | 257 | 188 | 024 | 078 | 044 | -049 | 028 | 016 | 049 | -214 | -005 | 064 | -145 |
| 94 | -052 | -302 | -294 | 329 | -170 | 126 | -113 | 055 | 184 | 146 | -036 | 341 | -258 | -162 | 219 | 037 |
| 65 | 186 | 248 | -482 | -054 | -178 | 409 | 254 | 176 | 294 | 353 | 122 | 277 | -075 | 113 | -046 | -030 |
| 94 | 022 | -242 | -075 | -221 | 071 | -062 | 199 | 457 | 160 | -086 | -202 | 248 | -090 | 094 | 219 | 334 |
| 48 | 403 | 686 | -219 | -049 | 330 | 186 | 179 | -356 | -173 | 292 | 290 | -208 | -066 | 304 | -444 | -206 |
| 33 | 235 | 508 | -158 | 668 | -061 | 087 | -116 | 220 | -023 | 117 | 065 | -015 | -104 | -469 | -166 | 061 |
| 73 | 361 | -140 | -025 | -340 | -490 | 005 | -167 | -122 | -129 | 303 | 217 | 364 | -010 | 422 | 470 | 127 |
| 40 | -634 | -736 | 239 | -340 | 177 | -198 | 075 | 115 | 257 | -416 | -327 | -076 | 169 | -036 | 111 | 018 |
| 02 | 234 | 339 | -221 | 421 | 066 | 074 | 156 | 158 | -064 | 114 | 014 | 027 | -335 | -364 | -196 | 108 |
|  | 405 | 906 | -191 | 424 | 109 | 119 | 069 | -093 | -199 | 185 | 170 | -111 | -180 | -048 | -273 | -141 |
|  |  | 378 | -363 | -128 |  |  | -087 | 051 | -025 | 540 | 448 | 073 | -063 | 233 | -141 | 430 |
|  |  |  | -124 | 308 | 131 | 118 | -023 | -233 | -195 | 171 | 192 | -156 | -062 | 158 | -272 | -256 |
|  |  |  |  | -011 | 246 | -522 | 113 | 194 | -357 | -720 | -311 | -386 | 054 | 017 | 295 | -256 |
|  |  |  |  |  | 170 | 031 | -200 | -180 | -212 | -011 | -236 | 204 | -272 | -249 | -131 | -343 |
|  |  |  |  |  |  | -453 | 091 | -206 | -124 | -287 | -405 | 013 | -208 | 044 | -220 | -529 |
|  |  |  |  |  |  |  | 093 | 025 | 109 | 452 | 355 | -067 | 268 | -315 | -411 | 159 |
|  |  |  |  |  |  |  |  | 370 | -128 | -319 | -205 | -133 | -012 | -224 | 045 | 058 |
|  |  |  |  |  |  |  |  |  | 225 | -246 | -019 | -286 | 331 | -499 | 007 | 483 |
|  |  |  |  |  |  |  |  |  |  | 018 | -141 | 114 | -155 | -266 | -153 | 282 |
|  |  |  |  |  |  |  |  |  |  |  | 708 | 307 | 072 | 295 | -210 | 255 |
|  |  |  |  |  |  |  |  |  |  |  |  | -354 | 251 | 151 | -088 | 204 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -316 | 333 | 355 | 057 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -129 | -202 | 252 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 274 | -128 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -038 |

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| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | -021 | -126 | -099 | -166 | -375 | -291 | 093 | -280 | 047 | 233 | 445 | -066 | 072 |
| 2 | | | 501 | 230 | -532 | -160 | -407 | -155 | -337 | 301 | -094 | -067 | 012 | -001 |
| 3 | | | | 317 | -023 | -200 | -115 | 229 | 252 | -004 | 135 | -029 | 328 | 424 |
| 4 | | | | | -153 | -147 | -168 | 103 | -139 | -427 | 105 | -121 | 364 | -193 |
| 5 | | | | | | 596 | 914 | 289 | 185 | -113 | 511 | -026 | 368 | 009 |
| 6 | | | | | | | 872 | 212 | 282 | 105 | 151 | 224 | -039 | -432 |
| 7 | | | | | | | | 284 | 255 | -016 | 389 | 098 | 205 | -214 |
| 8 | | | | | | | | | 218 | -334 | 437 | 417 | -102 | -158 |
| 9 | | | | | | | | | | -231 | -146 | 295 | -289 | 111 |
| 10 | | | | | | | | | | | -154 | -248 | 074 | 054 |
| 11 | | | | | | | | | | | | 128 | 188 | 031 |
| 12 | | | | | | | | | | | | | -547 | -284 |
| 13 | | | | | | | | | | | | | | 449 |
| 14 | | | | | | | | | | | | | | |
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| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |

2

## RAW SCORE MATRIX--SENIOR GIRLS (N = 17)

| 14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 072 | 345 | -241 | 012 | 340 | 243 | 441 | 184 | 156 | -378 | 444 | 042 | 432 | -185 | -343 | 302 | 024 |
| 001 | -026 | -280 | -430 | 001 | -107 | -193 | -259 | -150 | 292 | -040 | -598 | -370 | -653 | -215 | 046 | -132 |
| 424 | 241 | -045 | -489 | 175 | -012 | 127 | 163 | -069 | -090 | 123 | 162 | -114 | 112 | -003 | 048 | 264 |
| 193 | 036 | -208 | 030 | -149 | 039 | -174 | -555 | 029 | 321 | -386 | -264 | 117 | -097 | -236 | -189 | -076 |
| 009 | -186 | 162 | 024 | 203 | 193 | -059 | 337 | 101 | -191 | 034 | 605 | 381 | 675 | 240 | 155 | 393 |
| 432 | -361 | 118 | -026 | -065 | -152 | -054 | 041 | 215 | -131 | -016 | 191 | 086 | 256 | 326 | 289 | 437 |
| 214 | -297 | 159 | 002 | 091 | 041 | -064 | 226 | 170 | -183 | 012 | 466 | 276 | 542 | 313 | 241 | 461 |
| 158 | -197 | 108 | -259 | 177 | -020 | 427 | -027 | 324 | -377 | 093 | 250 | 629 | 220 | -185 | -125 | 136 |
| 111 | 177 | 224 | 062 | 120 | -287 | 383 | 225 | -021 | -259 | 127 | 545 | -113 | 563 | 676 | 175 | 399 |
| 054 | -047 | -216 | -273 | -008 | -089 | -102 | 343 | 005 | -124 | 040 | -080 | -415 | -101 | -125 | 002 | -030 |
| 031 | 082 | 022 | -149 | 466 | 510 | -036 | 058 | 411 | -273 | -094 | 255 | 592 | 371 | -256 | -093 | 170 |
| 284 | 111 | -035 | 012 | -021 | 085 | 661 | 193 | 460 | -671 | 594 | 222 | 464 | -050 | -003 | 367 | 258 |
| 449 | 104 | -024 | -290 | -043 | 166 | -288 | -010 | -168 | 243 | -227 | 058 | 025 | 180 | -167 | -052 | 186 |
|  | 556 | 349 | -198 | 244 | 094 | -101 | 393 | -119 | -063 | -074 | 127 | -152 | 185 | 133 | -040 | 264 |
|  |  | 395 | 134 | 141 | 262 | 199 | 397 | 000 | -273 | 152 | 328 | -054 | 305 | -138 | 195 | 272 |
|  |  |  | 487 | -054 | 272 | -080 | 263 | 158 | -188 | -136 | 180 | 063 | 303 | 221 | -141 | 260 |
|  |  |  |  | -139 | 328 | -121 | -015 | 069 | 018 | -215 | 021 | 070 | 158 | 342 | -198 | -163 |
|  |  |  |  |  | -187 | -118 | 169 | 060 | -070 | -029 | 088 | 143 | 133 | 119 | 390 | 426 |
|  |  |  |  |  |  | 196 | 011 | 423 | -362 | 026 | 198 | 526 | 230 | -192 | -369 | -099 |
|  |  |  |  |  |  |  | 137 | 283 | -682 | 657 | 495 | 481 | 194 | -079 | 178 | 177 |
|  |  |  |  |  |  |  |  | -058 | -490 | 525 | 627 | -141 | 442 | 037 | 315 | 251 |
|  |  |  |  |  |  |  |  |  | -737 | -022 | 016 | 647 | 055 | -154 | -093 | 423 |
|  |  |  |  |  |  |  |  |  |  | -521 | -517 | -554 | -321 | 114 | -169 | -469 |
|  |  |  |  |  |  |  |  |  |  |  | 489 | 143 | 008 | -191 | 615 | 202 |
|  |  |  |  |  |  |  |  |  |  |  |  | 238 | 875 | 109 | 221 | 319 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 189 | -260 | -049 | 234 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 242 | -068 | 279 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 080 | 249 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 645 |

?

| (25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 042 | 432 | -185 | -343 | 302 | 024 | -032 | -225 | 317 | 121 | -059 | -197 | 059 | 753 | -122 | 233 | 316 |
| -598 | -370 | -653 | -215 | 046 | -132 | 106 | 496 | 066 | 104 | -335 | -331 | 251 | -006 | -002 | -143 | 049 |
| 162 | -114 | 112 | -003 | 048 | 264 | 390 | 483 | -078 | 147 | -074 | -552 | 471 | -080 | 211 | 226 | 453 |
| -264 | 117 | -097 | -236 | -189 | -076 | 499 | 271 | -080 | 225 | -497 | -099 | -399 | 036 | -178 | 338 | 152 |
| 605 | 381 | 675 | 240 | 155 | 393 | -337 | 005 | 115 | -124 | 597 | 424 | -259 | -186 | -033 | 266 | 107 |
| 191 | 086 | 256 | 326 | 289 | 437 | -374 | 146 | -268 | -513 | 482 | 553 | -305 | -299 | 039 | -047 | -456 |
| 466 | 276 | 542 | 313 | 241 | 461 | -397 | 077 | -066 | -338 | 609 | 539 | -313 | -266 | -001 | 139 | -167 |
| 250 | 629 | 220 | -185 | -125 | 136 | -081 | -037 | -355 | -629 | 007 | -112 | 052 | 115 | 340 | 146 | -055 |
| 545 | -113 | 563 | 676 | 175 | 399 | 286 | 012 | -454 | -261 | 016 | -291 | 298 | -066 | 355 | 092 | -088 |
| -080 | -415 | -101 | -125 | 002 | -030 | -277 | 138 | -041 | 116 | 497 | 345 | 101 | -062 | -065 | -319 | -139 |
| 255 | 592 | 371 | -256 | -093 | 170 | -339 | -090 | 445 | 006 | 163 | 044 | -086 | 140 | 057 | 246 | 411 |
| 222 | 464 | -050 | -003 | 367 | 258 | 212 | -060 | -245 | -336 | -002 | -168 | 185 | 405 | 302 | 017 | -201 |
| 058 | 025 | 180 | -167 | -052 | 186 | -161 | 120 | 330 | 322 | 302 | 262 | -244 | -175 | -220 | 237 | 373 |
| 127 | -152 | 185 | 133 | -040 | 264 | -103 | 031 | 238 | 353 | 071 | -345 | 314 | -150 | 340 | 238 | 542 |
| 328 | -054 | 305 | -138 | 195 | 272 | 071 | 290 | 088 | 357 | -062 | -434 | 335 | 085 | 143 | 230 | 583 |
| 180 | 063 | 303 | 221 | -141 | 260 | -214 | 150 | -213 | -368 | 192 | -175 | 143 | -265 | 135 | 326 | 364 |
| 021 | 070 | 158 | 342 | -198 | -163 | 247 | -020 | -162 | -002 | -124 | -018 | -291 | 190 | -305 | 407 | 190 |
| 088 | 143 | 133 | 119 | 390 | 426 | -286 | -085 | 344 | -003 | -140 | -354 | 029 | 140 | 077 | 516 | 437 |
| 198 | 526 | 230 | -192 | -369 | -099 | 017 | -013 | 299 | 231 | 267 | -062 | 182 | 184 | -376 | 113 | 492 |
| 495 | 481 | 194 | -079 | 178 | 177 | 244 | -100 | -315 | -239 | 160 | -318 | 559 | 338 | -043 | -148 | -066 |
| 627 | -141 | 442 | 037 | 315 | 251 | -085 | 118 | 004 | 066 | 555 | 046 | 261 | 078 | 379 | 079 | 280 |
| 016 | 647 | 055 | -154 | -093 | 423 | -026 | -182 | -158 | -196 | 247 | 053 | -025 | -080 | -001 | 217 | -013 |
| -517 | -554 | -321 | 114 | -169 | -469 | -052 | 100 | 236 | 200 | -487 | 092 | -360 | -132 | -153 | -111 | -098 |
| 489 | 143 | 008 | -191 | 615 | 202 | 090 | -054 | 095 | -119 | 349 | -173 | 543 | 318 | -024 | -200 | 038 |
|  | 238 | 875 | 109 | 221 | 319 | 034 | 019 | -077 | 005 | 528 | 002 | 323 | 007 | 068 | 031 | 228 |
|  |  | 189 | -260 | -049 | 234 | -100 | -237 | 036 | -224 | 127 | -021 | -066 | 205 | -160 | 304 | 141 |
|  |  |  | 242 | -068 | 279 | -030 | 054 | -123 | 061 | 422 | 101 | 066 | -153 | 097 | 158 | 255 |
|  |  |  |  | 080 | 249 | 170 | -037 | -209 | -125 | -013 | -115 | -016 | -043 | 092 | 249 | -079 |
|  |  |  |  |  | 645 | -152 | 118 | 182 | -073 | 153 | -091 | 105 | 043 | -072 | 179 | 021 |
|  |  |  |  |  |  | -193 | 138 | -066 | -190 | 351 | -117 | 098 | -304 | 029 | 468 | 187 |
|  |  |  |  |  |  |  | 184 | -354 | 301 | -412 | -408 | 096 | 261 | -015 | 198 | 086 |
|  |  |  |  |  |  |  |  | -394 | 153 | -103 | -223 | 099 | -315 | 018 | 167 | 157 |
|  |  |  |  |  |  |  |  |  | 397 | 059 | 035 | 002 | 219 | -256 | -008 | 429 |
|  |  |  |  |  |  |  |  |  |  | -184 | -065 | -038 | -047 | -133 | -010 | 286 |
|  |  |  |  |  |  |  |  |  |  |  | 530 | 112 | -170 | -145 | -143 | 003 |
|  |  |  |  |  |  |  |  |  |  |  |  | -648 | -158 | -044 | -308 | -520 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -032 | 025 | -303 | 256 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -076 | 185 | 239 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -120 | -208 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 620 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | -188 | -140 | 012 | -284 | -415 | -367 | -152 | -022 | 031 | 159 | 316 | -046 | 119 |
| 2 | | | 278 | 256 | 080 | 243 | 166 | 174 | 015 | 034 | -020 | -047 | 045 | 141 |
| 3 | | | | 253 | 001 | 096 | 049 | 114 | -060 | -028 | -001 | 114 | 054 | 139 |
| 4 | | | | | 017 | 166 | 091 | 105 | 028 | 174 | 118 | 115 | 115 | 251 |
| 5 | | | | | | 763 | 947 | 221 | 065 | 018 | 072 | -241 | -012 | 102 |
| 6 | | | | | | | 930 | 253 | 060 | 097 | 049 | -261 | 094 | 164 |
| 7 | | | | | | | | 248 | 065 | 059 | 065 | -266 | 040 | 139 |
| 8 | | | | | | | | | 109 | 048 | 005 | -110 | -056 | 042 |
| 9 | | | | | | | | | | -019 | 079 | -031 | 038 | -135 |
| 10 | | | | | | | | | | | 081 | 038 | 060 | 256 |
| 11 | | | | | | | | | | | | 094 | 053 | 220 |
| 12 | | | | | | | | | | | | | 075 | 134 |
| 13 | | | | | | | | | | | | | | 161 |
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| 41 | | | | | | | | | | | | | | |

RAW SCORE MATRIX--BOYS TOTAL (N = 292)

| (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 119 | 088 | -009 | -103 | 088 | 089 | 126 | 107 | -156 | -080 | 106 | 209 | 048 | 205 | 019 | 090 | 012 |
| 141 | 028 | -006 | 098 | -084 | 062 | -074 | 054 | 029 | -028 | 010 | 032 | -033 | 030 | -054 | -082 | -031 |
| 139 | 104 | 001 | 079 | 045 | 206 | -034 | -002 | 086 | -015 | -037 | -029 | 054 | -020 | -131 | -091 | -112 |
| 251 | 194 | 016 | -013 | 030 | 158 | 022 | 127 | -077 | -066 | 089 | 156 | -044 | 123 | -056 | -042 | 085 |
| 102 | 101 | 107 | 057 | 090 | 103 | 052 | 098 | -047 | -015 | 195 | 032 | 121 | -107 | -238 | -011 | 044 |
| 164 | 073 | 073 | 029 | 033 | 107 | -008 | 096 | 100 | -099 | 200 | -012 | 175 | -153 | -148 | -049 | -016 |
| 139 | 094 | 095 | 046 | 067 | 110 | 025 | 104 | 023 | -058 | 212 | 013 | 156 | -137 | -209 | -030 | 017 |
| 042 | -001 | 098 | 053 | -075 | 107 | 119 | -034 | -034 | 010 | 033 | 045 | 035 | 022 | -109 | -034 | 014 |
| -135 | -072 | 031 | -078 | 003 | -019 | 205 | 124 | -023 | -221 | 133 | 235 | 078 | 177 | 159 | 060 | 314 |
| 256 | -031 | 070 | -022 | 024 | 047 | 027 | 011 | -068 | -009 | 103 | -015 | 062 | -067 | -070 | -072 | 039 |
| 220 | 159 | 063 | -079 | 222 | 303 | -002 | 051 | -119 | 050 | 103 | 025 | 063 | -027 | -111 | -066 | -095 |
| 134 | 110 | -021 | -042 | 091 | 104 | 040 | 114 | -055 | -087 | 049 | 088 | 072 | 073 | 039 | 065 | -084 |
| 161 | 131 | 039 | 008 | -061 | 105 | -117 | 116 | 065 | -054 | 037 | -039 | 011 | -073 | -023 | -085 | 003 |
|  | 414 | 129 | -018 | 175 | 420 | 016 | 048 | -073 | 035 | 115 | 009 | 116 | -073 | -258 | -180 | -165 |
|  |  | 267 | 174 | 206 | 344 | 083 | 128 | -165 | 007 | 096 | 150 | 080 | 108 | -184 | -130 | -063 |
|  |  |  | 534 | 126 | 128 | 040 | 046 | -030 | 003 | 031 | 127 | 039 | 129 | -043 | 056 | 008 |
|  |  |  |  | 064 | 041 | -015 | -025 | 003 | 010 | -063 | 039 | 057 | 100 | -054 | 008 | 038 |
|  |  |  |  |  | 369 | 100 | 104 | -013 | -148 | 164 | 164 | 126 | 085 | 018 | -002 | -034 |
|  |  |  |  |  |  | 049 | 037 | -035 | 008 | 115 |  | 155 | -085 | -105 | -105 | -225 |
|  |  |  |  |  |  |  | -147 | -255 | -270 | 264 | 482 | 137 | 372 | 064 | 156 | 115 |
|  |  |  |  |  |  |  |  | -176 | -596 | 657 | 635 | 186 | 326 | 018 | 003 | 084 |
|  |  |  |  |  |  |  |  |  | -407 | -209 | -334 | 300 | -259 | 148 | -022 | -032 |
|  |  |  |  |  |  |  |  |  |  | -523 | -586 | -460 | -377 | -178 | -085 | -133 |
|  |  |  |  |  |  |  |  |  |  |  | 522 | 197 | -004 | 039 | 069 | 097 |
|  |  |  |  |  |  |  |  |  |  |  |  | 204 | 831 | 061 | 137 | 181 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 110 | 015 | 019 | -005 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 053 | 129 | 154 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 120 | 088 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 225 |

| (25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 209 | 048 | 205 | 019 | 090 | 012 | 046 | 033 | 170 | 031 | -219 | -114 | -081 | -100 | 027 | -219 | 011 |
| 032 | -033 | 030 | -054 | -082 | -031 | 113 | -028 | 112 | 173 | 084 | 123 | -046 | 083 | -003 | -134 | 074 |
| -029 | 054 | -020 | -131 | -091 | -112 | 147 | -078 | 179 | 206 | -024 | 077 | -075 | -080 | 010 | -015 | 175 |
| 156 | -044 | 123 | -056 | -042 | 085 | 166 | -015 | 247 | 217 | 025 | 070 | -048 | 000 | -035 | -174 | 216 |
| 032 | 121 | -107 | -238 | -011 | 044 | 098 | 153 | 087 | 154 | 361 | 358 | -027 | -104 | 017 | -093 | 071 |
| -012 | 175 | -153 | -148 | -049 | -016 | 146 | 063 | 102 | 189 | 371 | 349 | -012 | 035 | -067 | -093 | 063 |
| 013 | 156 | -137 | -209 | -030 | 017 | 127 | 121 | 097 | 182 | 389 | 375 | -021 | -041 | -023 | -097 | 071 |
| 045 | 035 | 022 | -109 | -034 | 014 | 095 | -109 | 008 | 067 | 009 | 139 | -099 | -006 | -110 | 009 | 058 |
| 235 | 078 | 177 | 159 | 060 | 314 | -076 | -037 | -192 | -186 | 053 | 102 | -065 | -027 | 016 | 017 | -087 |
| -015 | 062 | -067 | -070 | -072 | 039 | 077 | 021 | 137 | 032 | 124 | 114 | -025 | 120 | 008 | -145 | -048 |
| 025 | 063 | -027 | -111 | -066 | -095 | 093 | 075 | 205 | 092 | -072 | -093 | 029 | -099 | -036 | -240 | 131 |
| 088 | 072 | 073 | 039 | 065 | -084 | 069 | 040 | 148 | 072 | -171 | -026 | -143 | -110 | 040 | -223 | 023 |
| -039 | 011 | -073 | -023 | -085 | 003 | 120 | -019 | 105 | 161 | 038 | 113 | -075 | -065 | -030 | -179 | 100 |
| 009 | 116 | -073 | -258 | -180 | -165 | 247 | 007 | 524 | 302 | -008 | 024 | -013 | 041 | -083 | -472 | 246 |
| 150 | 080 | 108 | -184 | -130 | -063 | 285 | 065 | 474 | 363 | -088 | -016 | -036 | -096 | -100 | -350 | 366 |
| 127 | 039 | 129 | -043 | 056 | 008 | 073 | -023 | 196 | 168 | 005 | 040 | -005 | -035 | -103 | -201 | 171 |
| 039 | 057 | 100 | -054 | 008 | 038 | -015 | -073 | 058 | 107 | 086 | 025 | 032 | -056 | 008 | -038 | 122 |
| 164 | 126 | 085 | 018 | -002 | -034 | 090 | 076 | 191 | 215 | 055 | -060 | 096 | 003 | 036 | -096 | 186 |
|  | 155 | -085 | -105 | -105 | -225 | 212 | -070 | 549 | 406 | -009 | 152 | -040 | -010 | 008 | -246 | 378 |
| 482 | 137 | 372 | 064 | 156 | 115 | 002 | 076 | -108 | -081 | 001 | 074 | -051 | -110 | 158 | -028 | -024 |
| 635 | 186 | 326 | 018 | 003 | 084 | 036 | 028 | 104 | 130 | 018 | 066 | -052 | -062 | -064 | -152 | 050 |
| -334 | 300 | -259 | 148 | -022 | -032 | 021 | -087 | -096 | 110 | 156 | 103 | 012 | 068 | -019 | 199 | 031 |
| -586 | -460 | -377 | -178 | -085 | -133 | -019 | -025 | 099 | -084 | -137 | -136 | 018 | 047 | -028 | -035 | -034 |
| 522 | 197 | -004 | 039 | 069 | 097 | 071 | 114 | 076 | 088 | 015 | 070 | -031 | -091 | 025 | -180 | 009 |
|  | 204 | 831 | 061 | 137 | 181 | 039 | 072 | -014 | -015 | 004 | 032 | -011 | -113 | 046 | -141 | -003 |
|  |  | 110 | 015 | 019 | -005 | 130 | -096 | 048 | 092 | 101 | 130 | -035 | -035 | 016 | -104 | 102 |
|  |  |  | 053 | 129 | 154 | -009 | 024 | -067 | -093 | -010 | -025 | 021 | -087 | 042 | -051 | -009 |
|  |  |  |  | 120 | 088 | -141 | 004 | -209 | -115 | -153 | -026 | -100 | 105 | 029 | 183 | -166 |
|  |  |  |  |  | 225 | -119 | 025 | -131 | -071 | -063 | -079 | 019 | 010 | -037 | 070 | -112 |
|  |  |  |  |  |  | -116 | 060 | -207 | -111 | 139 | -032 | 104 | -119 | 056 | 162 | -076 |
|  |  |  |  |  |  |  | 008 | 280 | 221 | 003 | 093 | -093 | -031 | 040 | -290 | 170 |
|  |  |  |  |  |  |  |  | -027 | 128 | 098 | -031 | 126 | -149 | 034 | 023 | 058 |
|  |  |  |  |  |  |  |  |  | 427 | -112 | -029 | -079 | 029 | -092 | -491 | 377 |
|  |  |  |  |  |  |  |  |  |  | 090 | 042 | 021 | 078 | 047 | -166 | 401 |
|  |  |  |  |  |  |  |  |  |  |  | 332 | 369 | -033 | 063 | 141 | 050 |
|  |  |  |  |  |  |  |  |  |  |  |  | -638 | -036 | -009 | -090 | -076 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 046 | 016 | 174 | 079 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -091 | 134 | 056 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 005 | -075 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 176 |

| Variable No. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | -070 | -111 | 139 | -280 | -357 | -334 | -187 | 056 | -089 | 104 | 335 | 113 | 111 |
| 2 | | | 336 | 187 | 071 | 150 | 114 | 133 | -082 | 074 | -023 | 056 | 129 | 059 |
| 3 | | | | 208 | 190 | 290 | 250 | 115 | -071 | 046 | 053 | -040 | 098 | 220 |
| 4 | | | | | 089 | 135 | 116 | 140 | 084 | -002 | 189 | 148 | 157 | 233 |
| 5 | | | | | | 791 | 954 | 125 | -091 | 074 | 066 | -204 | 027 | -066 |
| 6 | | | | | | | 939 | 158 | -112 | 091 | 067 | -184 | 083 | -032 |
| 7 | | | | | | | | 148 | -107 | 086 | 070 | -206 | 055 | -053 |
| 8 | | | | | | | | | 172 | -022 | 047 | 055 | 036 | -009 |
| 9 | | | | | | | | | | -127 | 027 | 165 | -055 | 011 |
| 10 | | | | | | | | | | | 025 | -062 | -001 | 032 |
| 11 | | | | | | | | | | | | 084 | 049 | 269 |
| 12 | | | | | | | | | | | | | 043 | 141 |
| 13 | | | | | | | | | | | | | | 342 |
| 14 | | | | | | | | | | | | | | |
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| 40 | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | |

2

RAW SCORE MATRIX--GIRLS TOTAL (N = 241)

| 4) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | (30) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 147 | 149 | 201 | 069 | 179 | 082 | 061 | -042 | -058 | 203 | 050 | 059 | -062 | 128 | 102 | 074 |
| 59 | 076 | -125 | -028 | 030 | 173 | -085 | 081 | 134 | -119 | 042 | -012 | 105 | -049 | 037 | -004 | -164 |
| 20 | 134 | -059 | -053 | 153 | 245 | 074 | 027 | 079 | -122 | 005 | 109 | 138 | 126 | -021 | 096 | -011 |
| 33 | 188 | -048 | -041 | 149 | 230 | 053 | 087 | -121 | 017 | 159 | 071 | -001 | -009 | -025 | -005 | 146 |
| 66 | -054 | -025 | -054 | -014 | -025 | 162 | 208 | -084 | -160 | 140 | 239 | 102 | 208 | -177 | 119 | 164 |
| 32 | -061 | -031 | -127 | -064 | -006 | 112 | 201 | -012 | -136 | 034 | 221 | 087 | 225 | -079 | 074 | 097 |
| 53 | -061 | -029 | -093 | -039 | -017 | 146 | 217 | -053 | -182 | 121 | 244 | 100 | 228 | -139 | 104 | 140 |
| 09 | 042 | -056 | -167 | 005 | 009 | 026 | -026 | 112 | -086 | 029 | -007 | 121 | -061 | 037 | -054 | -042 |
| 11 | 015 | 057 | -094 | 070 | -068 | 263 | 088 | -133 | -112 | 166 | 210 | -009 | 126 | 057 | 141 | 194 |
| 32 | 053 | 010 | -060 | 118 | 006 | -043 | 026 | 008 | -011 | -014 | 049 | -095 | 073 | -076 | -123 | -151 |
| 69 | 153 | 148 | -027 | 276 | 320 | 062 | 103 | -117 | -014 | 134 | 057 | 024 | -038 | 015 | -028 | -052 |
| 41 | 154 | -055 | -001 | -015 | 117 | 139 | -009 | -024 | -053 | 175 | 075 | 048 | -036 | -029 | 114 | 075 |
| 42 | 300 | 011 | 061 | 092 | 249 | 098 | 067 | -094 | -008 | 159 | 069 | 056 | -042 | -050 | -051 | -026 |
|  | 525 | 099 | 082 | 279 | 488 | 059 | 213 | -146 | -061 | 233 | 129 | 023 | 030 | -033 | -153 | -031 |
|  |  | 295 | 259 | 197 | 351 | 033 | 282 | -161 | -196 | 342 | 153 | 073 | 006 | -001 | -152 | -030 |
|  |  |  | 474 | -009 | 007 | 034 | 193 | -090 | -092 | 169 | 125 | 002 | 067 | -017 | -005 | -036 |
|  |  |  |  | -089 | 040 | -114 | 103 | -013 | -014 | 147 | -021 | 039 | -094 | 030 | -009 | -084 |
|  |  |  |  |  | 371 | 179 | 172 | -148 | -096 | 135 | 205 | 029 | 124 | -018 | 050 | 038 |
|  |  |  |  |  |  | 011 | 089 | 015 | -094 | 132 | 037 | 115 | -077 | -014 | -072 | -048 |
|  |  |  |  |  |  |  | 075 | -257 | -381 | 390 | 624 | 187 | 493 | 125 | 222 | 185 |
|  |  |  |  |  |  |  |  | -312 | -525 | 655 | 672 | 166 | 432 | -084 | 085 | 117 |
|  |  |  |  |  |  |  |  |  | -463 | -295 | -379 | 554 | -280 | 139 | -043 | -047 |
|  |  |  |  |  |  |  |  |  |  | -454 | -521 | -680 | -355 | -121 | -135 | -142 |
|  |  |  |  |  |  |  |  |  |  |  | 575 | 182 | 068 | 036 | 074 | 078 |
|  |  |  |  |  |  |  |  |  |  |  |  | 185 | 833 | 002 | 208 | 217 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 115 | 143 | 058 | 058 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -027 | 205 | 218 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 004 | -034 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 253 |

3

| 5) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) | (40) | (41) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 059 | -062 | 128 | 102 | 074 | 088 | 044 | 185 | 142 | -259 | -242 | 053 | -007 | 038 | -032 | 157 |
| 12 | 105 | -049 | 037 | -004 | -164 | 093 | -054 | 126 | 107 | 126 | 112 | -036 | 069 | -015 | -094 | 139 |
| 09 | 138 | 126 | -021 | 096 | -011 | 089 | 018 | 267 | 144 | 139 | 076 | 012 | -075 | -063 | -051 | 227 |
| 71 | -001 | -009 | -025 | -005 | 146 | 271 | 004 | 363 | 231 | 001 | 083 | -088 | -005 | 053 | -097 | 256 |
| 39 | 102 | 208 | -177 | 119 | 164 | 132 | 082 | 055 | 027 | 538 | 364 | 046 | -107 | 038 | -100 | -044 |
| 21 | 087 | 225 | -079 | 074 | 097 | 028 | 064 | 097 | 093 | 472 | 297 | 073 | -027 | 040 | -103 | 012 |
| 44 | 100 | 228 | -139 | 104 | 140 | 088 | 077 | 079 | 061 | 536 | 352 | 062 | -074 | 041 | -108 | 019 |
| 07 | 121 | -061 | 037 | -054 | -042 | 068 | -040 | -047 | -038 | 168 | 209 | -079 | -038 | -077 | 032 | 053 |
| 10 | -009 | 126 | 057 | 141 | 194 | -075 | -101 | 031 | -075 | -006 | 084 | -085 | 016 | -57 | -010 | 029 |
| 49 | -095 | 073 | -076 | -123 | -151 | -036 | -090 | -111 | 052 | 086 | 126 | -049 | 091 | 056 | -016 | -140 |
| 57 | 024 | -038 | 015 | -028 | -052 | 146 | -101 | 330 | 177 | -066 | -034 | -030 | -094 | 102 | -246 | 115 |
| 75 | 048 | -036 | -029 | 114 | 075 | 105 | 022 | 146 | 015 | -178 | -147 | -005 | 102 | -001 | -128 | 038 |
| 69 | 056 | -042 | -050 | -051 | -026 | 067 | -108 | 367 | 257 | 003 | 069 | -062 | 038 | 076 | -249 | 269 |
| 29 | 023 | 030 | -033 | -153 | -031 | 166 | -015 | 604 | 407 | -102 | -001 | -106 | -009 | 095 | -420 | 393 |
| 63 | 073 | 006 | -001 | -152 | -030 | 155 | 079 | 420 | 306 | -112 | 033 | -131 | -053 | 101 | -407 | 303 |
| 25 | 002 | 067 | -017 | -005 | -036 | 093 | -043 | 065 | 021 | -148 | -046 | -058 | -077 | 117 | -056 | 105 |
| 21 | 039 | -094 | 030 | -009 | -084 | 105 | 043 | 048 | 157 | -129 | -198 | 015 | 008 | 127 | -049 | 070 |
| 05 | 029 | 124 | -018 | 050 | 038 | 062 | -003 | 229 | 238 | -049 | 003 | -061 | -152 | -021 | -142 | 147 |
| 37 | 115 | -077 | -014 | -072 | -048 | 176 | -001 | 538 | 344 | -077 | -043 | -023 | -141 | -068 | -264 | 371 |
| 24 | 187 | 493 | 125 | 222 | 185 | 127 | -030 | 197 | -027 | 023 | 005 | 037 | -076 | -058 | -198 | -067 |
| 72 | 166 | 432 | -084 | 085 | 117 | 097 | 033 | 174 | 211 | 048 | 109 | -057 | -132 | 185 | -230 | 179 |
| 79 | 554 | -280 | 139 | -043 | -047 | -139 | 070 | -155 | -150 | 033 | -005 | 027 | -045 | -083 | 256 | 049 |
| 21 | -680 | -355 | -121 | -135 | -142 | -024 | -072 | -105 | 000 | -054 | -065 | 000 | 179 | -033 | 054 | -135 |
| 75 | 132 | 068 | 036 | 074 | 078 | 197 | -043 | 333 | 229 | -009 | 043 | -020 | -134 | 092 | -362 | 155 |
|  | 185 | 833 | 002 | 208 | 217 | 112 | 018 | 184 | 099 | 078 | 066 | 020 | -168 | 073 | -248 | 041 |
|  |  | 115 | 143 | 058 | 058 | 007 | 064 | 145 | 023 | 052 | 019 | 021 | -070 | -042 | -087 | 084 |
|  |  |  | -027 | 205 | 218 | 015 | 060 | 004 | -034 | 080 | 052 | 025 | -119 | 025 | -084 | -049 |
|  |  |  |  | 004 | -034 | -044 | 092 | -026 | 006 | -133 | -113 | -001 | -053 | -044 | 057 | 027 |
|  |  |  |  |  | 253 | -059 | 088 | -018 | -019 | 004 | -082 | 076 | 007 | 055 | 066 | -035 |
|  |  |  |  |  |  | 033 | 100 | 045 | 063 | 116 | -027 | 093 | -104 | 037 | 038 | 077 |
|  |  |  |  |  |  |  | 046 | 263 | 181 | 071 | 005 | 056 | -059 | -074 | -149 | 186 |
|  |  |  |  |  |  |  |  | -035 | 057 | 069 | -028 | 091 | -233 | -059 | 007 | 014 |
|  |  |  |  |  |  |  |  |  | 458 | -054 | 002 | -044 | -016 | -003 | -555 | 408 |
|  |  |  |  |  |  |  |  |  |  | 004 | 044 | -048 | -039 | 085 | -358 | 259 |
|  |  |  |  |  |  |  |  |  |  |  | 498 | 273 | -149 | -062 | 007 | 017 |
|  |  |  |  |  |  |  |  |  |  |  |  | -664 | -045 | -048 | -098 | -085 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | -124 | 034 | 120 | 074 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | -105 | 020 | 005 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -159 | -078 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 180 |

## Appendix E

## UNPUBLISHED STUDIES AND PROJECT BIBLIOGRAPHY

In order to communicate the preliminary findings of the Gifted Adolescent Project to the professional public, several research papers were written prior to the preparation of the final technical report. The findings contained in these preliminary reports have, for the most part, been incorporated in the main body of the technical report. Most of these earlier reports were read at professional meetings and of these all but two have been subsequently published. The two articles that have not yet appeared in print in their complete forms are reproduced below. Following this is a complete bibliography of the material that has been published.

# Psychological Health Criteria Among Adolescents: A Study of Manifest and Latent Indicators

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Few psychological concepts have aroused more theoretical and research interest than the one which posits "levels" of personality structure. While the terminology used in describing these levels varies considerably, (e.g., public vs. private, manifest vs. latent, surface vs. depth, phenotypic vs. genotypic, etc.) there is substantial agreement that the use of various levels in describing an individual may result in quite different pictures of that person. (1,2)

The precise meaning of the lack of congruence between levels remains unknown. It has been suggested by some that these discrepancies would be accompanied by intra-personal stress and would therefore be correlates of pathology (3). At least one personality theorist has suggested that neurotic conditions can best be diagnosed by the discovery of disagreements between direct and projective methods (4). A conservative position would be to expect that such discrepancies would have at least some behavioral manifestations of research or clinical significance.

## Problem

The research described here was designed to study a group of adolescents for whom assessment procedures, assumed to examine different levels of personality structure, gave rise to conflicting evaluations. Specifically, the group consists of individuals who, on a self-report instrument, give responses which characterize them as being high in psychological health but who, at the same time, give responses to a projective device (a third person sentence completion test) which characterize them as being low in psychological health. The performance of this group on a number of school-related variables plus the group Rorschach is compared with that of their school peers in general and, more especially, with two sub-groups of these peers: those who are consistently high on both the self-report and the projective instrument, and those who are consistently low on both.

## Subjects, and instruments, and procedures

The groups being compared were selected from a population of 449 adolescents (sixth grade through senior high) attending a private school in the Midwest. These sub-groups were composed on the basis of their responses to the following two instruments:

1. The California Personality Test. The test was administered and scored using standard procedures. A total score was used to describe the performance of an individual. This score was taken to indicate relative presence or absence of psychological health at the manifest level of personality.

2. G-J-G Verbal Thinking Speed Test. This is a sentence completion instrument designed by the authors, consisting of sixty sentence stems written in the third person. Directions to the subjects informed them that the test was designed "to see how fast you can think in sentences." Each completed sentence was scored on the presence or absence of morbid fantasy, defeatism, hostility, and the like. The subject's total score was taken to indicate the relative presence or absence of psychological health at a latent level of personality.

Scores on these two instruments were combined to give the following groups:

1. High Manifest -- High Latent. Subjects who were at least one standard deviation above the mean on both instruments when compared with like-sexed peers at the same grade level. These subjects presented a positive picture of psychological health at both levels. N = 26
2. Low Manifest -- Low Latent. Subjects who were at least one standard deviation below the mean on both instruments when compared with like-sexed peers at the same grade level. These subjects presented a negative picture of psychological health at both levels. N = 23

3. High Manifest - Low Latent. Subjects who were at least one standard deviation above the mean on the California Test of Personality and at least one standard deviation below the mean on the sentence completion instrument, both comparisons being made with like-sexed peers at the same grade level. These subjects presented a positive picture of psychological health at the manifest level and a negative picture at the latent level.[1] N = 18

These sub-groups were compared with the population from which they were drawn using the following variables: standardized verbal achievement tests, standardized numerical achievement tests, both part of the Cooperative Achievement Tests; ratings by classroom teachers on the degree to which the students were preferred by teachers; and the Harrower-Erikson and Steiner group Rorschach test (high scores indicating the relative absence of pathological responses). The mean scores of thse sub-groups are shown in Table 1. For the purpose of analysis raw scores, with the exception of teacher ratings and intelligence quotients, were converted to T scores with a mean of 50 and a standard deviation of 10.

## Results

As the data in Table 1 indicate, the group exhibiting a wide discrepancy between manifest and latent levels is also seen to have

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[1] For purposes of symmetry in design the identification of a fourth group, Low Manifest - High Latent was contemplated. However, individuals exhibiting this combination appeared so rarely that the group was omitted from the analysis.

## TABLE 1

### Means and Standard Deviations of Experimental Groups and Total Population on Dependent Variables

| | | Experimental Groups | | | |
|---|---|---|---|---|---|
| | | High Manifest High Latent N= 26 | High Manifest Low Latent N=18 | Low Manifest Low Latent N=23 | Total Population[1] N=449 |
| Verbal | $\bar{X}$ | 47.0 | 50.17 | 47.7 | 49.87 |
| Achievement | | 9.49 | 8.94 | 10.2 | 8.26 |
| Numerical | $\bar{X}$ | 48.6 | 45.0 ** | 47.4 | 49.61 |
| Achievement | | 8.04 | 6.81 | 10.68 | 9.19 |
| I.Q. | $\bar{X}$ | 126.0 ** | 137.0 | 129.0 | 132.22 |
| | | 10.63 | 17.83 | 13.78 | 15.06 |
| Teacher | $\bar{X}$ | 10.21 | 10.44 | 8.0 ** | 10.23 |
| Ratings | | 1.83 | 1.22 | 2.13 | 3.64 |
| Group | $\bar{X}$ | 47.4 | 43.9 * | 47.1 | 49.35 |
| Rorschach | | 9.63 | 10.86 | 10.98 | 10.05 |

[1] For purposes of comparison the scores of each experimental group were extracted from the total population before T tests were computed.

*Significant at the .05 level when compared with Total Population.

**Significant at the .01 level when compared with Total Population.

significantly more pathology on Rorschach responses and to be noticeably deficient in the area of numerical achievement, when compared with the total population of students. Differences on verbal achievement, IQ, and teacher ratings were not significant for this group. The low manifest--low latent group, on the other hand, differed significantly from the total population on only one variable: teacher ratings. While this group does not exhibit deficiencies in achievement areas, nor in group Rorschach responses, its members clearly appear to be less preferred by teachers.

The only variable on which the high manifest - high latent group differed from the total school population was that of intelligence, being significantly lower on this variable. This finding was quite unexpected and lends itself to a number of alternative explanations.

## Discussion

The most important findings of this investigation concern the relative mal-functioning of the High-Low group. At a theoretical level these findings lend support to the view which holds public-private conflict to be of particular clinical relevance. Proponents of this view might suggest that the psychic energy expended in the maintenance of a facade of normality is debilitating to the individual. The genesis and precise consequences of this condition remain the focus of future research. Of particular interest is the question of why the group exhibited deficiencies in numerical achievement but not in verbal achievement.

The absence of corresponding deficiencies in the Low-Low group is quite interesting when it is recalled that members of this group were at least one standard deviation below the mean on both instruments. While it is not possible to prove the null hypothesis, it is nonetheless surprising to find the Low-Low subjects doing as well on achievement tests and having as few pathologic responses to the Rorschach as do their High-High peers. The intellectual superiority of the entire sample population is a factor to be considered in interpreting this finding. It is also possible that the admission policies of this school make the appearance of extreme pathology in students unlikely. Thus, the members of the Low-Low group may not

discrepancies. The California Personality Test and a projective sentence completion instrument were the selection instruments. Subjects with "good" responses to the California but "poor" responses to the projective instrument were found to have more pathology on the Rorschach and to be deficient in numerical achievement. The group which performed poorly on both instruments differed only in being less preferred by teachers. Theoretical implications of these findings are discussed.

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Paper read at the American Sociological Society meetings, Seattle, Washington, August 1958.

# The Social Context of Giftedness: A Multidimensional Approach to Definition and Method[1]

by

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"Giftedness" as related to children is most frequently defined as a score on an intelligence test, and typically the study of the so-called gifted child has been equated with the study of the single I.Q. variable. This psychometric or unidimensional definition of giftedness leaves the field open to at least two types of error. First, there is the obvious limitation of the single metric, which not only restricts our perspective of the more general phenomenon but places on the one concept a greater theoretical and predictive burden than it was intended to carry. Second, there is the failure to distinguish between the single psychometric meaning of giftedness and the multitude of differential social contexts within which giftedness appears in practice. It is, for example, often taken for granted that the gifted child as psychometrically defined is equally valued by teachers and by parents, in the classroom and at home, that he is held to be an equally "good bet" by teachers and by parents to succeed as an adult, and that children themselves want to be gifted.

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[1] This research was supported by a grant from the U.S. Office of Education.

It can readily be demonstrated - as we shall in a moment - that none of these is the case at all. The gifted child is not equally valued by teachers and by parents, in the classroom and at home; he is not held to be an equally "good bet" by teachers and by parents to succeed as an adult; and children themselves do not necessarily want to be gifted, at least not as this is defined psychometrically.

We believe that despite its longevity there is nothing inevitable about the psychometric model. Indeed, we would argue that in many ways the model is only an historical happenstance - a consequence of the accident that the context of early inquiries in the field was the classroom and the reference group the teacher. If we change the social context from the classroom and the reference group from the teacher, we may identify qualities defining giftedness for other situations just as the I.Q. has for the classroom. In fact, if we changed the original criteria of learning, we would change the qualities defining giftedness even for the classroom and the teacher. To cite one example for many, if the context of learning involved the production of novelty rather than the rememberance of things known, then creativity as well as I.Q. might become the appropriate defining quality of giftedness.

The purpose of the investigation from which we are reporting here certain sections is to examine the research consequences of an attempt - and we may say at once a first and admittedly crude attempt - to study giftedness in children within a multidimensional or sociologically-oriented model instead of the more traditional unidimensional or psychometric model.

With these considerations in mind, we raised the following questions regarding the giftedness of children:

1. How do teachers and parents, the two most significant figures in the formal education of children, define the gifted child?

2. How are these definitions of the gifted child related to two simultaneous but different social contexts, his desirability by teachers in the classroom and his desirability by parents in the home?

3. How are these definitions of giftedness related to the qualities believed by teachers and parents to be needed for success in adult life?

4. How do the personal aspirations of children themselves compare with the definitions of giftedness (i.e. of what they ought to aspire to) held for them by parents and by teachers?

5. Finally and perhaps most crucially, what are the consequences of such multidimensional approach to giftedness for predicting achievement in the classroom?

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Our first step in attempting to answer the questions was to construct an instrument called the Outstanding Traits Test as follows. On the basis of the literature, we listed all the general qualities describing the gifted child or more generally giftedness. Clearly one of the qualities was intelligence - but only one. Another was social skill. Another emotional stability. Another, a wide variety of interests. Another, creativity. Another, superior school achievement. Another, health. And so on. In all, we found eleven such global characteristics. We then presented the list to graduate students, parents, teachers and others with instructions to add to or subtract from this list qualities they considered socially or personally prestigeful so that if a child were especially endowed with one or more of these characteristics, they would be willing to call him "gifted." Two more qualities were added, and our Outstanding Traits Test then consisted of thirteen descriptions of giftedness. We make no claims to the exhaustiveness of the qualities we used - we merely found that after numerous trials no qualities of the same order of generality were either added to or subtracted from this list.

With this instrument in hand, we were prepared to answer the first four of our questions. We shall present the specific procedures and obtained data relevant to each question in turn.

1. How do teachers and parents define the gifted child? We presented the Outstanding Traits Test to 14 female teachers and 28 mothers, and asked them to rank the children described in the Test "on the degree to which you would be willing to call them gifted." The findings were quite straightforward. Both teachers and parents ranked the qualities in essentially the same order - the correlation between the two rankings was .86. Thus, the first half-dozen teacher rankings were in order: I.Q., Good marks, Creativity, Goal directedness, Social skill, Moral character. The first half-dozen parent rankings were: Creativity, I.Q., Goal directedness, Social skill, Good marks, Wide Interests. In effect, we may conclude that teachers and parents tend to define the gifted child in pretty much the same terms. So far so good - no conflict for anyone.

2. An so we proceeded to our second question: How are these definitions of the gifted child related to his desirability by teachers in the classroom and by parents in the home? We presented the Outstanding

Traits Test to the teachers again, and asked them to rank the children described by each of the qualities once more, this time "on the degree to which you would like to have them as members of your class." We then compared the rankings obtained with these instructions with the rankings we had already obtained when we asked the same teachers to rank the same qualities for giftedness. The results were again straightforward. The two rankings were quite similar - the correlation between them was .86.

We now repeated the procedure with our parents. We again presented the Outstanding Traits Test, and asked them to rank the children once more, this time "on the degree to which you would like to have them as members of your family." Now the plot begins to thicken. The rankings obtained with these instructions bore no resemblance whatsoever to those we had obtained from the same parents for giftedness - the correlation between the two rankings was exactly 0. For example, the three qualities ranked highest by the parents as defining the gifted child were: Creativity, I.Q., Goal directedness; the three qualities they ranked highest as defining the child they wanted in the family were: Emotional stability, Moral character, Social skill.

In effect, the teacher wants the gifted child, as he defines him, in the classroom; the parent does not want the gifted child, as he defines him, in the family.

3. And so we asked our third question: How are these descriptions of giftedness related to the qualities believed by teachers and parents to be needed for success in adult life? Accordingly, we asked our teachers and parents to rank the children described in the Outstanding Traits Test

"on the degree to which they will succeed in adult life." We then compared these rankings with those we already had from the same group for the definition of giftedness.

The results were quite startling. The relationship between the qualities defining the gifted child and the qualities held making for success in adult life for our teachers was nil - the correlation between the two rankings was exactly .11. That is, those qualities the teacher held most characteristic of the gifted child were not related to those qualities which he believed most likely to make for success when the child grows up. For example, the three qualities ranking highest for defining giftedness were: I.Q., Good marks, Creativity; for predicting success in adult life, they were: Social skill, Goal directedness, Emotional stability. (The correlation for the rankings given by parents was .51)

In this connection, we also compared the qualities teachers want of children in the classroom with those they believe make for success in adult life. The correlation was 0, or to be exact, .01. (The parallel correlation between the qualities parents want of children in the family and those they believe make for success in adult life was .58)

In effect, if we may overstate the case somewhat, what the teacher appears to be saying is: the children who are gifted and the children I like to teach are not the same ones who I feel will be successful as adults. Here then we see one dilemma of educating the gifted child as he is generally defined - those characteristic held most prestigeful for children in classroom are not the same characteristics held most likely to make for success when the children reach adult status. And however subtly, this does or at least may get communicated to the child.

4. This leads us to the final question in this series: How do the personal aspirations of children themselves compare with the definitions of giftedness held for them by teachers and parents? We presented the Outstanding Traits Test to some 450 high school students and asked them to rank the different children "on the degree to which you would like to be like them." We then compared these rankings of what might be called the self-ideal of children with the rankings defining gifted children we already had from teachers and parents. The correlations varied for boys and for girls, for teachers and for parents, but they were uniformly low - no correlation exceeded .30, and indeed two of the correlations were negative. For example, the first three qualities selected by girls as those they would like for themselves were: Social skill, Moral character, Emotional stability. High marks, I.Q., and Creativity ranked toward the bottom. It will be recalled that I.Q., High Marks, and Creativity were exactly the qualities theld most characteristic of giftedness by both teachers and parents.

The point we would make is that children aspire to qualities different from - if not antithetical to - the qualities their teachers and parents hold descriptive of giftedness. They seem instead to aspire to those qualities their teachers and parents hold predictive of success. In this sense, children do not want to be gifted. They would much rather be successful.

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We may now turn to our last and in some ways crucial issue: What are the consequences of such multidimensional approach to giftedness for predicting achievement in the classroom - which is, after all, one of the sixty-four thousand dollar questions in this area? More specifically, what is the relationship of our various types of gifted children, i.e. the highly intelligent, the creative, the emotionally stable, the socially skilled, and so on, to classroom performance? We are conducting a series of studies along these lines, and we should like to report by way of illustration just one of the experiements here.

This experiment was designed to examine the differential school performance of two types of gifted adolescents.[2] One was the "standard" type of gifted adolescent within the psychometric framework, represented by children exceptionally high in I.Q. The other was the adolescent, frequently unidentified as gifted within the psychometric framework, represented by children not exceptionally high in I.Q. but exceptionally high in one of the other of our variables defining giftedness, i.e. creativity. A full account of the experiment is being reported elsewhere, and the details need not detain us here. In brief however, on the basis of standard I.Q. tests and five verbal and non-verbal creativity measures administered to some 450 students in a Midwestern private secondary school, two groups were formed: (1) Students exceptionally high in creativity but not in I.Q. - N=24; (2) Students exceptionall high in I.Q. but not in creativity - N= 28. In addition, all students were given standard verbal and numerical achievement tests appropriate to their grade levels, and rated by their teachers on the degree to which they "liked" them.

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[2] A detailed account of the experiment is reported in "The Highly Creative and the Highly Intelligent Adolescent: An Attempt at Differentiation," a paper read at the American Psychological Association meetings, Washington, D.C., August 28, 1958.

As it turned out, the mean I.Q. for the population was 132, for the high I.Q. group 150, for the high creativity group 128, the difference between the two experimental groups being significant at the .001 level.[3] Now the two empirical questions: First, what is the relative school achievement of the two groups? Second, what is the relative preference for the two groups by their teachers?

The results are quite noteworthy. First with respect to achievement, the mean score of the population was 50, with a standard deviation of 10. For the high I.Q. group, it was 55, higher than the population mean at the .01 level of significance. For the high creativity group, it was 56, also higher than the population mean at the .01 level of significance. These data, we would venture to say, merit more consideration than we can give them here, but the point we do want to make explicit in the present argument is that the students comprising our high creativity group would have been missed as potentially high achievers within the unidimensional framework represented by the I.Q. metric.

Now second, with respect to relative preference by teachers, the high I.Q. group received significantly higher preference ratings from their teachers than did the population as a whole; the high creativity group did not - and this despite the fact, as we have seen, that their actual achievement was no different from that of the high creativity group.

How does one account for the phenomenon that teachers seem to like the high I.Q. students better than the high creativity students? This brings us back to some things we suggested at the very beginning of the paper. We gave the Outstanding Traits Test to the two groups and asked them to rank the children with the different qualities in three ways: (1) On the degree to which you would like to be like them; (2) On the degree to which you believe teachers would like them; (3) On the degree to which you believe they will succeed in adult life.

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[3] It is clear that in order to control for the inevitably positive relationship between I.Q. and creativity, the experimental groups were constructed in such way that the creative group consisted only of subjects exceptionally high in creativity but not in I.Q., and the I.Q. group only of subjects exceptionally high in I.Q. but not in creativity. Most generally, of course, there is a positive, albeit far from perfect, correlation between scores on standard tests of intelligence and tests of "creativity." For our tests the correlation was of the order of .45.

The differences in ranking by the two groups are striking indeed, and we think quite suggestive of the different contexts within which these two types of gifted children see themselves, their teachers, education, and future success. For the high I.Q. group, the correlation between the qualities they would like to have for themselves and the qualities making for success was .81; for the high creativity group it was .01. For the high I.Q. group, the correlation between the qualities they would like to have themselves and the qualities they believe teachers like was .67; for the high creativity group it was (minus) -.25.

In effect, where the high I.Q. adolescent wants the qualities he believes make for success and the qualities are similar to those he believes his teachers like, the highly creative adolescent favors personal qualities having no relationship to those he believes make for success and are in many ways quite the reverse of those he believes his teachers favor. He does not like the same things his teacher likes; his teacher in turn, as we have seen, does not especially like him either.

Finally, we may briefly summarize the relevant empirical findings as follows: (1) Although teachers and parents define the gifted child in quite the same terms, teachers want gifted children in the classroom, parents do not want them in the family; (2) The relationship between qualities defining giftedness in children and qualities believed to be essential for success in adulthood is nil for teachers, somewhat higher but still low for parents; (3) The personal aspirations of children themselves are generally unrelated to the definitions of giftedness held for them by teachers and parents; (4) Using measures of cognitive functioning other than the I.Q. test, it was possible to identify children who, despite excellent scholastic performance, would not have been selected as potentially academically gifted by the standard measures of intelligence.

In short, the problem of identifying the gifted involves more than choosing children with the highest I.Q. That a broadening of the traditional definition of giftedness may lead to increased complexity in dealing educationally with these children should not obscure the potential benefits to both the children and society.

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